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Number 1.

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APRIL, 1910.

$2.00 per year.
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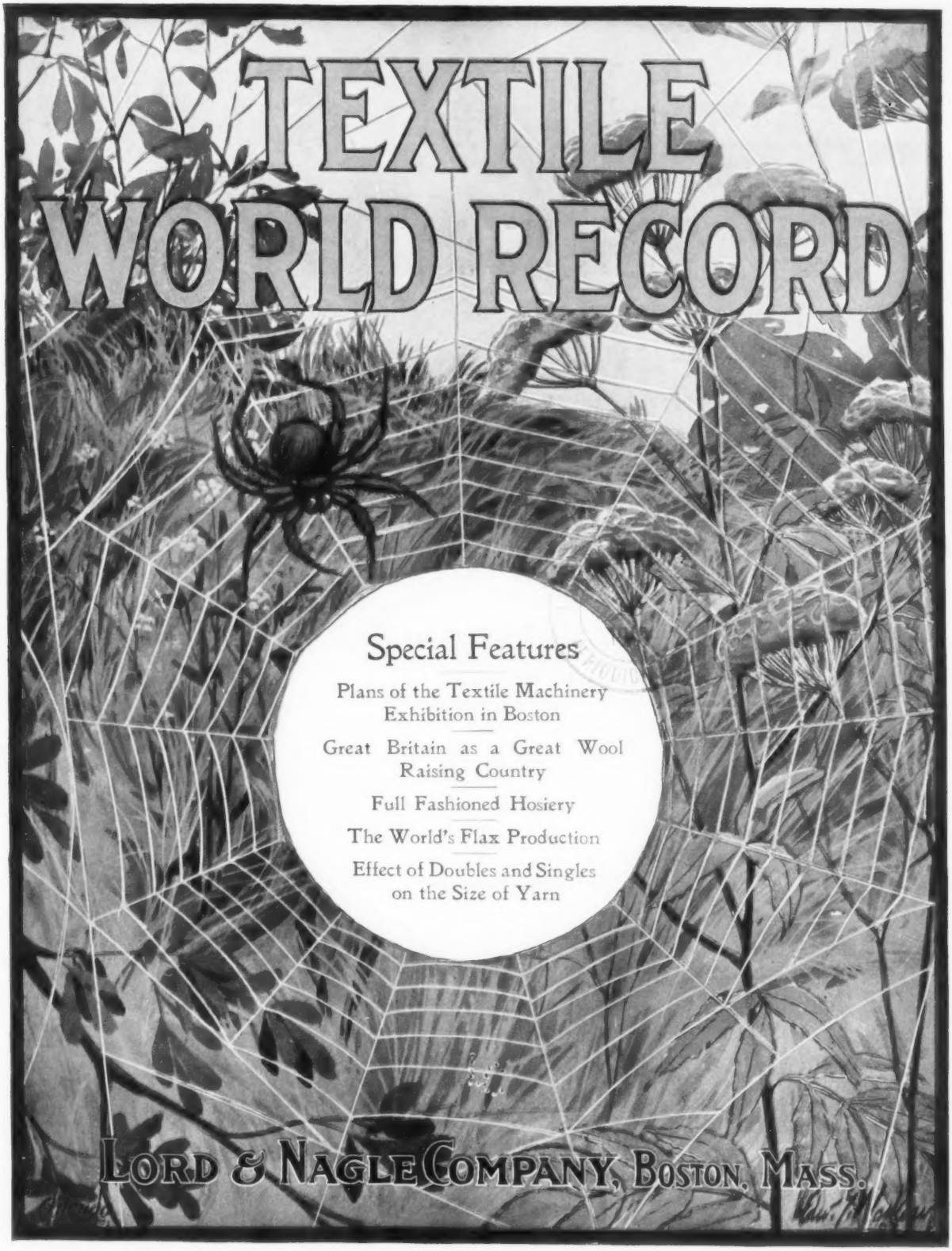
TEXTILE
WORLD RECORD
Special Features
Plans of the Textile Machinery Exhibition in Boston
Great Britain as a Great Wool Raising Country
Full Fashioned Hosiery
The World's Flax Production
Effect of Doubles and Singles on the Size of Yarn
LORD & NAGLE COMPANY, BOSTON, MASS.

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Mercerizing Machinery for Piece Goods

— AND —

Yarns in the Warp or Chain

All Kinds of Outfits for Bleaching Thread and Soft Twisted Yarns.
Bleaching Machinery for Yarns in the Warp or Chain.

BLEACHING
DYEING
DRYING
AND
FINISHING
MACHINERY

Singeing Machines, Boiling Kiers, Washers Water, Chemic and Sour Squeezers.

Rusden Patent, Continuous Chainless Steamer, Aniline Agers.

Dyeing Machines, Open Soapers, Blanket Washers, Color Kettles, Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders.

Water and Starch Mangles, Automatic Tentering Machines, Dyeing Machines for Chain Warps.

Dampening Machines. Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, etc.

Combination Rolls made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

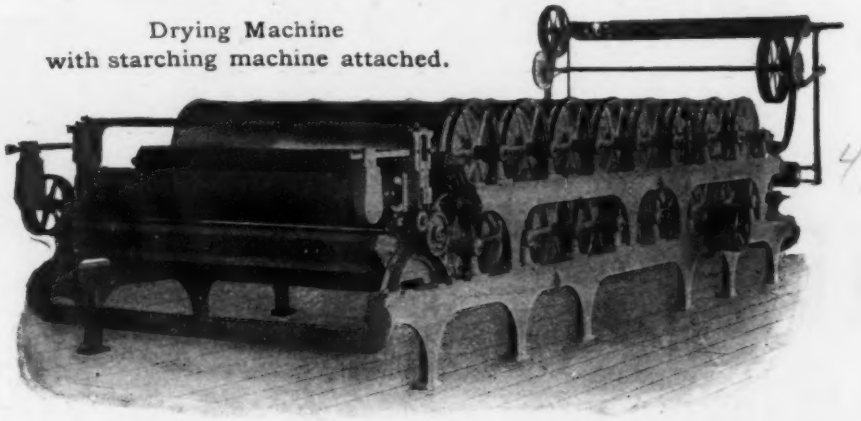
Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-Deposited Copper Rolls for all purposes.

Padding and Drying Machines for Shade Cloths, Single and Double Cylinder Engines, Hydraulic Presses and Pumps.

Estimates, Drawings and full particulars of complete plants furnished on application

THE TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.



Drying Machine
with starching machine attached.

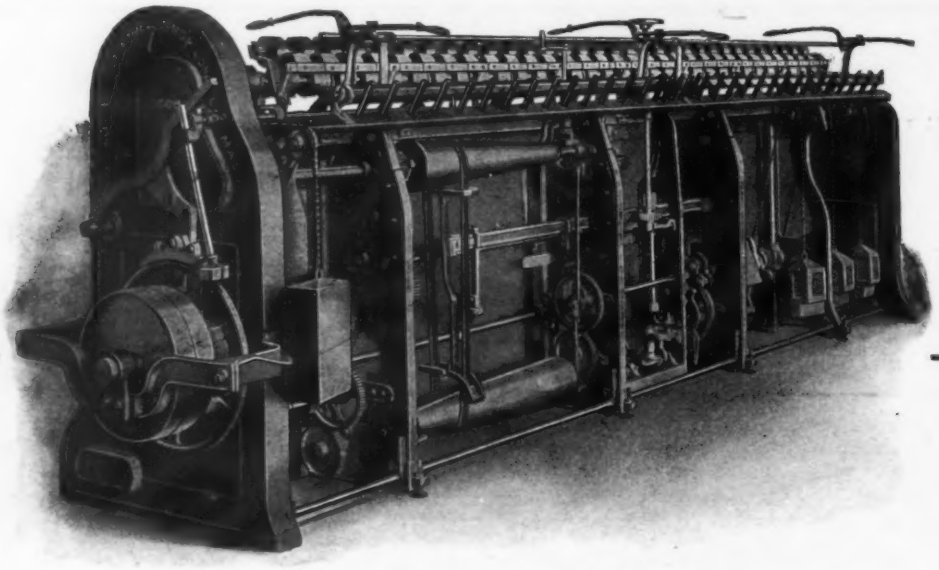
Bleaching,
Drying,
Dyeing,
Finishing,
Machinery

for all textile fabrics.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office, Room 417 Industrial Trust Building.



JUTE SLUBBER — BACK

Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

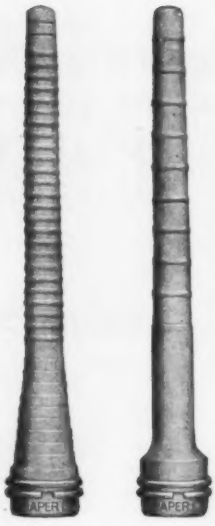
LOWELL, MASS.

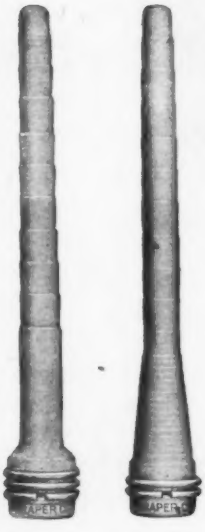
The BEST

NORTHROP LOOM

BOBBINS

Are Made By The





Northrop Loom

Manufacturers

LOOK FOR OUR NAME ON

THE BOBBINS

DRAPER COMPANY

HOPEDALE, MASS.

J. D. CLOUDMAN, Southern Agent 40 So. Forsyth St., Atlanta, Ga.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

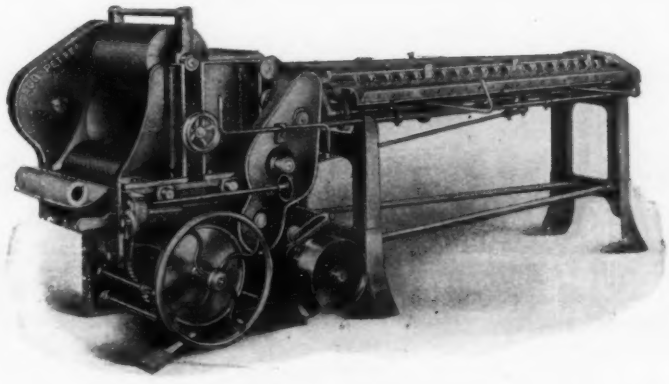
The Stafford Company

Readville, Mass.

DOUBLE CARDING

If you have not looked into this subject it will pay you to investigate, for by this means superior goods are being produced at less cost than was previously possible from single carding.

Patented Improved Lap Winder



Especially adapted to the requirements of Double Carding on Revolving Flat Cards.

This machine is made in two standard sizes,—20 and 22 1-2 ins., to make laps for Cards 40 and 45 inches respectively.

Catalogue and any further information desired will be furnished upon application.

Saco and Pettee Machine Shops

Works at Newton Upper Falls, Mass., and Biddeford, Maine

Southern Agent, A. H. WASHBURN, Charlotte, N. C.

The

WHITIN MACHINE WORKS

Whitinsville, Mass.

BUILDERS OF

Cotton Machinery

CARDS	SPOOLERS
COMBERS	TWISTERS
DRAWING FRAMES	REELS
ROVING FRAMES	Long Chain Quillers
SPINNING FRAMES	LOOMS

Southern Agent:
STUART W. CRAMER,
Charlotte, N. C. and Atlanta, Ga.

"Kitson Products"

We have added a regulating device to our evener which is giving good satisfaction. This is patented by a Southern Mill man and we are the only concern handling same. The device allows the operative to see at a glance where his evener is working, and to adjust same without passing in between machines.

THE BRITTON EVENER REGULATOR

is now applied to all

KITSON FINISHERS

We are also prepared to supply the device for old machines which are equipped with PERHAM & DAVIS EVENERS.

Write for particulars and price.

Kitson Machine Shop

Lowell, Mass.

The entire hose or stocking made and put together on one machine

That is what our automatic hosiery machine does; makes the foot and the rib-top on half-hose —or tucked-top on ladies' stockings—all together; and turns out this hosiery in strings by the yard or the mile.

6 1-2 dozen pairs of half-hose per day are made on a 136-needle machine. The machine is built in guages, from the coarsest up to and including 220 needles—3 3-4 One operator can attend to 15 or 16 machines. And one adjuster or fixer can look after 100.

All that is left to do then is to cut the hose apart and loop the toes on any looper.

No skilled topper is needed. You save that labor-cost. And the work goes on as you want it, independent of the skilled operator.

If you are interested, we would like to give you a few figures showing the profit and advantage of these machines.

Scott & Williams

Machinery for knitting mills.

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

FARR ALPACA COMPANY, Holyoke, Mass.

Since starting up this apparatus we have received the *third order* from these people for equipping their Preparatory and Finishing Mill, which is under construction.

WHY?

Simply because we keep the mills *cool* in summer, something that no other system is guaranteed to do.

If you would like to see how our apparatus is built, and the controlling apparatus, its construction, etc., call upon us at space No. 21 at the Textile Machinery Exhibition Mechanics Building, Boston, during the week of April 25th to 30th. We will have our representatives and engineers present to give you any information desired, about our system or humidity control.

Carrier Air Conditioning Co.

Of America

39 Cortland St., **NEW YORK**

165-c

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8″ stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste Into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material

JOSEPH SYKES BROS.
Card Clothing for Cotton.

JAMES CRITCHLEY & SONS,
Card Clothing for Woolen and Worsted

WILSON BROS. BOBBIN CO.'S

Bobbins, Shuttles, etc.

Dronsfield Bros. Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

"UNIVERSAL" WINDING MACHINES

THE ONLY COMPLETE WINDING SYSTEM

No. 90 "UNIVERSAL"
Cotton, Woolen and Worsted Filling

Offset high cost of material by avoiding and reclaiming waste.

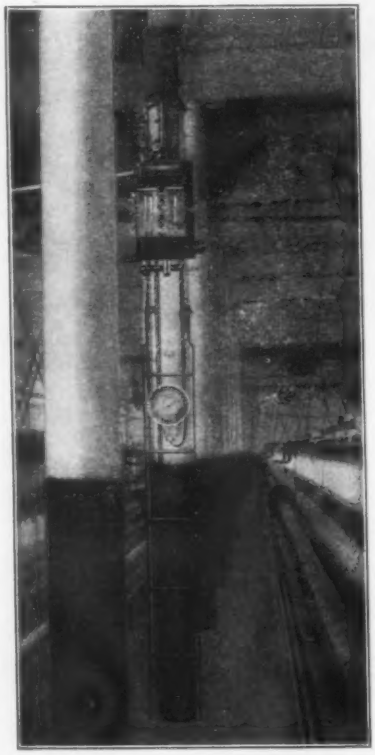
A representative will call on request to explain.

UNIVERSAL WINDING COMPANY

PATENTEES AND SOLE MANUFACTURERS

BOSTON U.S.A.

AIR CONDITIONERS IN SPINNING ROOM.



AUTOMATIC REGULATOR MOUNTED ON COLUMN IN SPINNING ROOM.

Imitation is the Sincerest Form of Flattery, But—

Manufacturers are hereby warned against using infringements upon the Cramer patents for

Automatic Regulators

for Humidifying and Heating Systems and

Air Conditioners

of the Spray Type with Fans!

Before considering the purchase of infringing devices, make sure that the vendor is amply financially responsible and guarantees to indemnify the purchaser against loss by damage suits, for both infringers and users of infringments, however crude such infringments may be, will be prosecuted to the full extent of the law.

Don't be imposed upon by misleading terms and claims as to what the vendor's patents cover; anyone can get a patent for almost anything in the way of specific constructions; the vital question is whether or not such patents infringe other prior patents.

Cramer System of Air Conditioning

Vital Requirements for an Automatic Regulator:

(1) There must be *no wicking* on the wet bulb member *"to bother with and give trouble, and cause inaccurate indications."*

(2) Both the dry and the wet bulb members *must indicate actual temperatures that can be read*, that the alleged accuracy of the device may be checked up by the purchaser at all times.

(3) The materials of which the dry and wet bulb members are made must *be well known to be durable*, and permanent under the trying conditions of moisture and temperature changes.

STUART W. CRAMER

Charlotte, N. C.

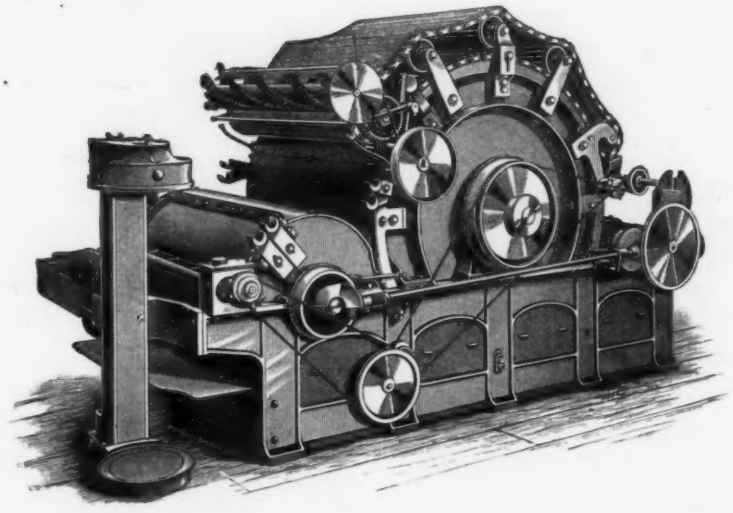
Providence, R. I. Atlanta, Ga.

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

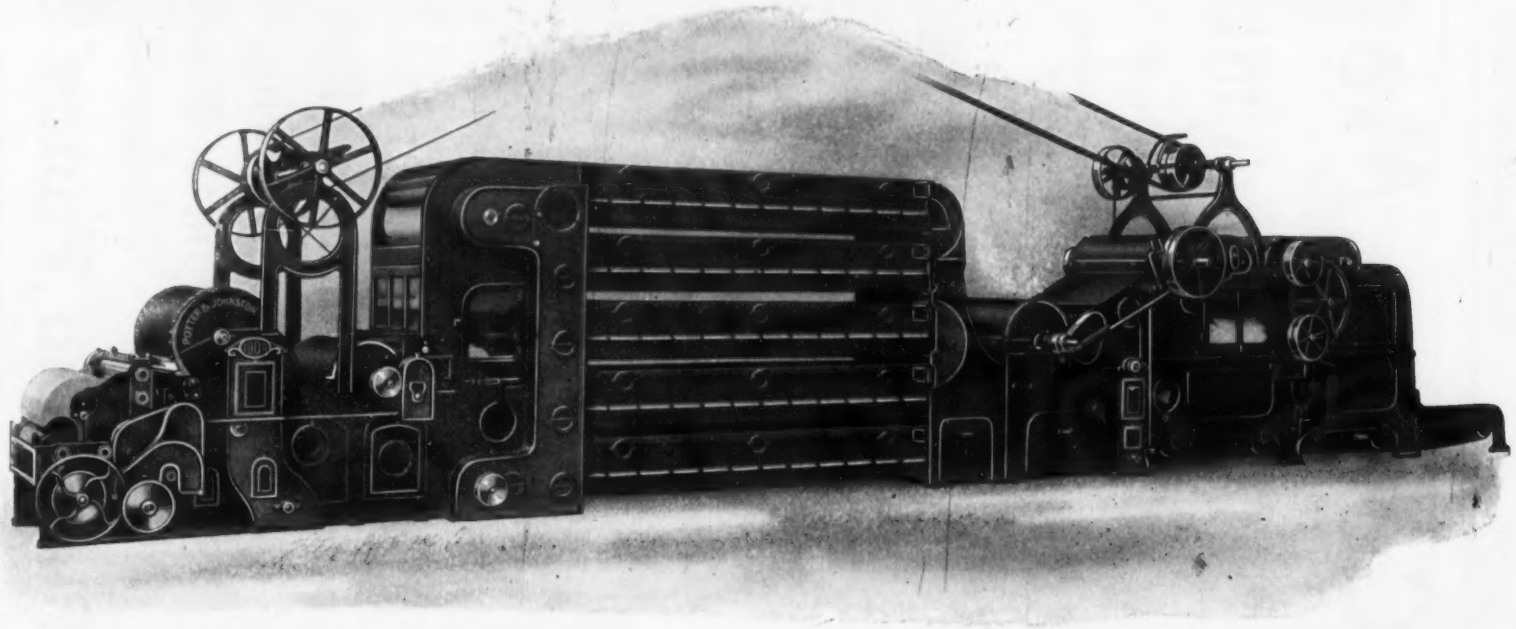
INCLUDING

Plain and Fancy Silk Looms

We have pleasure in introducing to Cotton Manufacturers our new line of

PICKING MACHINERY

Which embody many new and valuable features, and are of the same high class of workmanship and material which has characterized the POTTER & JOHNSTON product for many years.



Patented Combined Bale Breaker Automatic Feeder, Opener, Breaker and Automatic Cleaning Trunk.

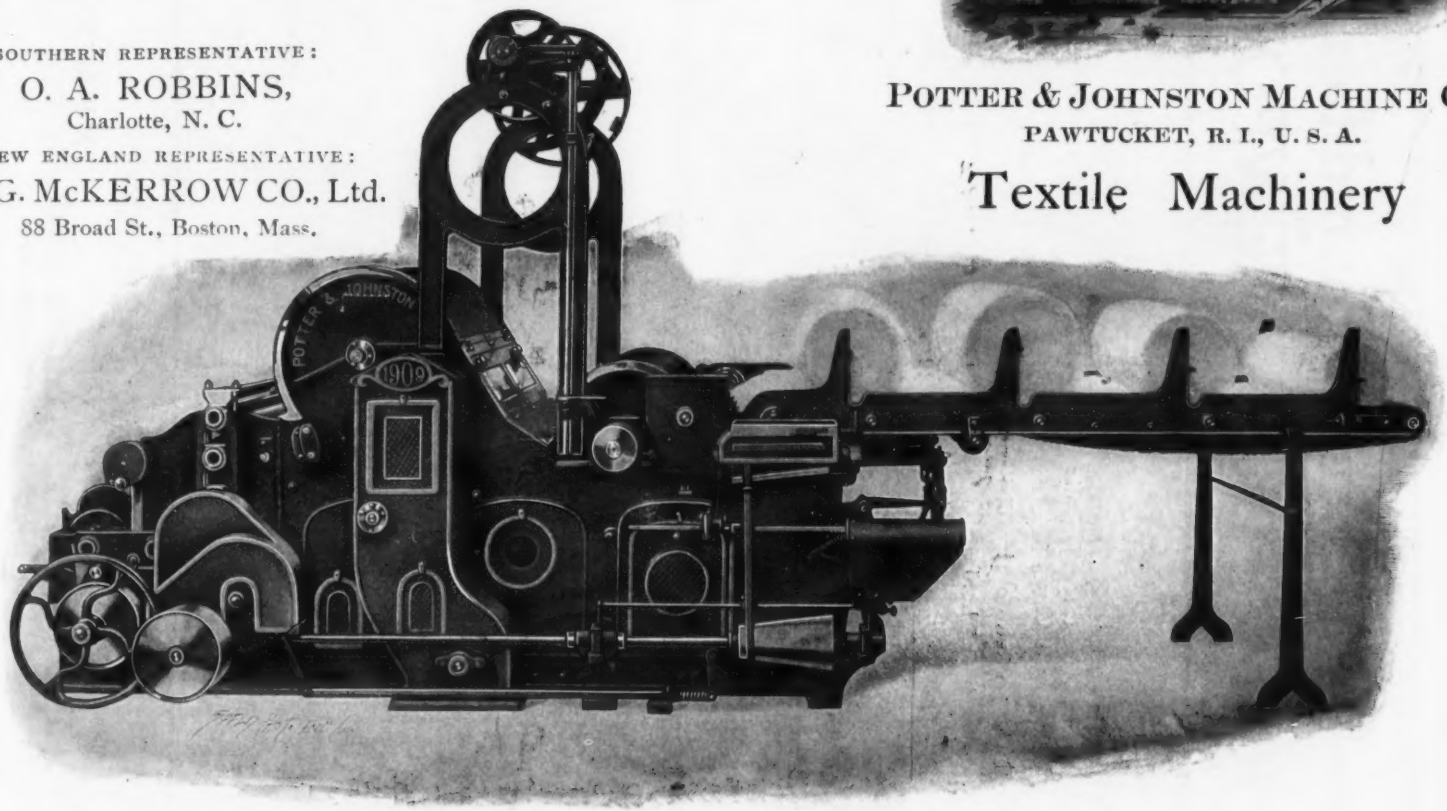
We Invite Inspection
by
Manufacturers Who Are Interested.

SOUTHERN REPRESENTATIVE:
O. A. ROBBINS,
Charlotte, N. C.

NEW ENGLAND REPRESENTATIVE:
H. G. McKERROW CO., Ltd.
88 Broad St., Boston, Mass.

POTTER & JOHNSTON MACHINE CO.
PAWTUCKET, R. I., U. S. A.

Textile Machinery



Patented Single Beater Finisher.

The Turbo-Humidifier FROM FOUR VIEWPOINTS

In initial cost, the Turbo is not excessive. We have no inflated values to pay dividends on—no hard and fast price per head. Each job is figured on its merits taking every element of cost into consideration — and a fair profit added.

Cost of attendance in the Turbo system is low. There are no receiving tanks, no drains, no casings, no cloths, no mantles to be cleaned. No motors or bearings to lubricate. No belts to renew.

TURBO TRADE MARK HUMIDIFIER

Cost of depreciation is a factor that should be considered in any machinery. Drains, receiving tanks, casings, cloths, mantles, bearings, belts, motors and such wear out. In the Turbo system these do not appear—hence a low depreciation cost.

Cost represented by disablement is high, where attendance and depreciation is high; especially if the attendance is indifferent. A machine put in to use. When disabled, its shut-down cost becomes a tax—an expense.

THE G. M. PARKS CO.,

FITCHBURG, MASSACHUSETTS

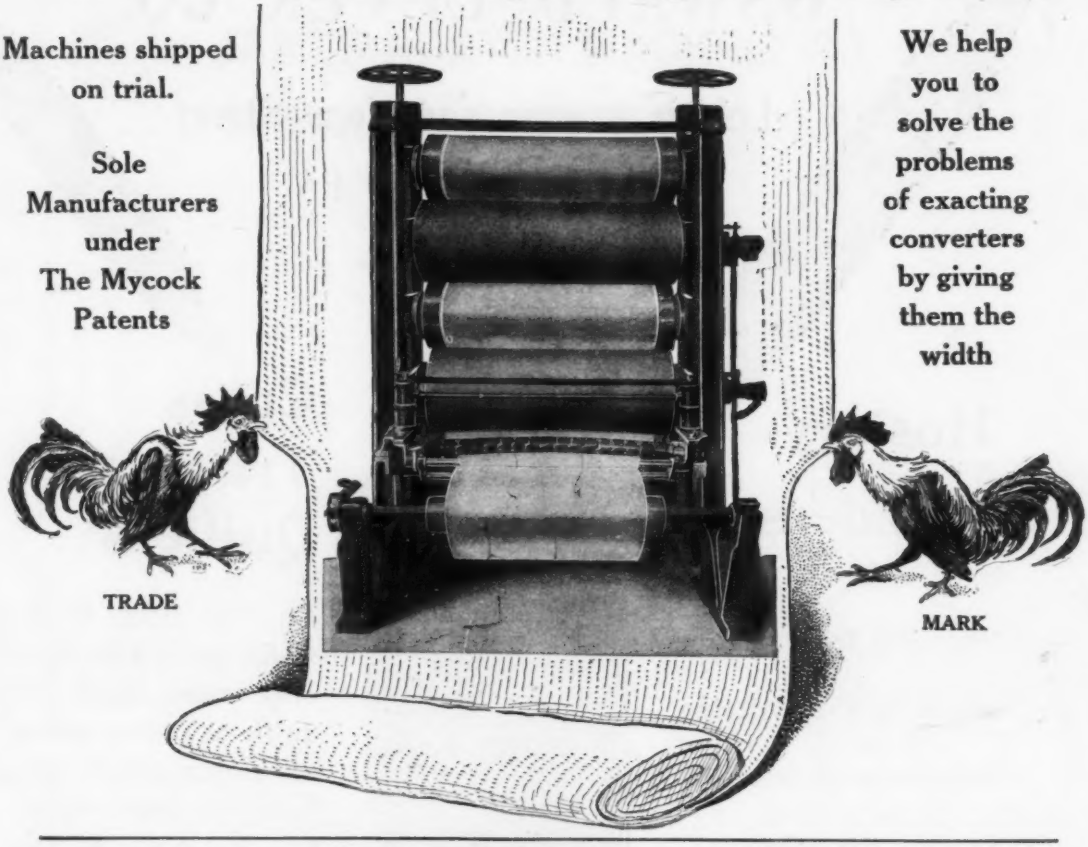
Southern Office: No. 1 Trust Bldg., Charlotte, N. C.
B. S. COTTRELL, Manager

The Wm. Mycock Regulating Cloth Expander

Machines shipped on trial.

Sole Manufacturers under The Mycock Patents

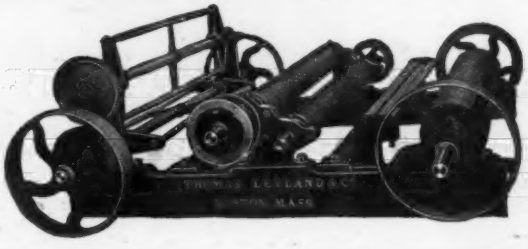
We help you to solve the problems of exacting converters by giving them the width



TRADE MARK

Improved Free Running, Solid Brass Scroll Cloth Scutchers

To run with Straight or Cross Belts; or Gears as desired



Problems of Opening Cloth Our Specialty

Gums, Dextrines, Corn, Wheat and Potato Starches

Soluble Starches, Softeners, Etc.

Thos. Leyland & Company, 60 India St., Boston, Mass.

F. T. WALSH, Manager

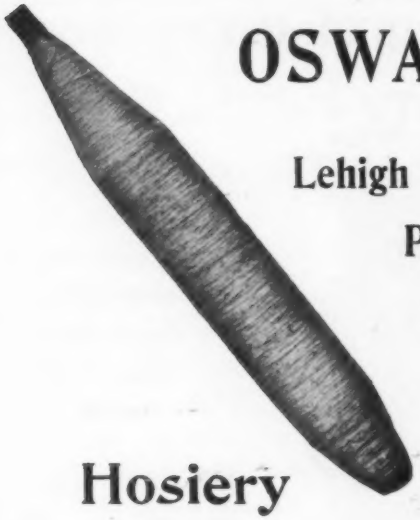
(See our Exhibit at Mechanics Hall, Boston, April 25th to 30th. Free tickets on application.)

OSWALD LEVER CO.

(INCORPORATED)

Lehigh Avenue and Hope Street

PHILADELPHIA, PA.



Hosiery Winders

To wind from the skein to the knitting bobbin in all sizes to suit any kind of yarn.

Cross Traverse Quillers

To wind direct from the skein or twister spool onto cops, butts, wood quills or paper tubes, to suit any grade of yarn from the coarsest of jute or duck to the finest of mercerized.

BUILDERS OF

Textile Machinery

WINDING A SPECIALTY

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Fulling Mill *Bulletin No. 50*

The Hunter FULLING MILL

It makes a Firmer, Better Cloth of Finer and Softer Finish than any other Fulling Mill.

Its expansion Friction Guides of Bronze Stop Motion and Picking Boxes make it admirably adapted to light and delicate, as well as heavy goods.

The frame is heavy cast iron, the casing Georgia Pine. Being driven by a friction pulley it can be stopped quickly avoiding damage to goods and effecting a great saving on belts.

The working surfaces being of Wood and Bronze do not stain the goods.

Send for Bulletin No. 50

American Textile Specialty Machinery Co.

670 Eddy St., Providence, R. I.

MANUFACTURERS OF

SHUTTLES AND SHUTTLE IRONS

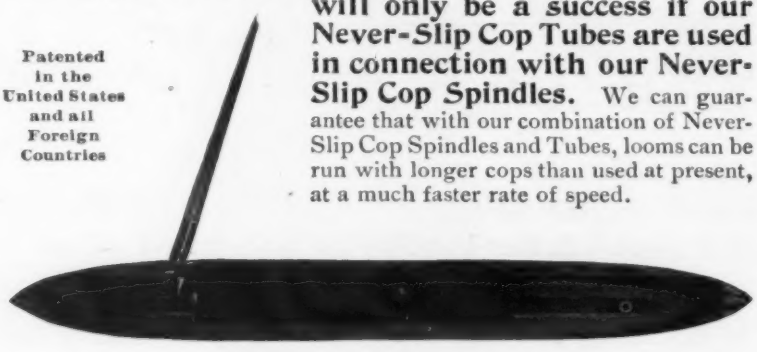
FOR ALL TEXTILE PURPOSES

Never-Slip Cop Tube

Patent applied for.

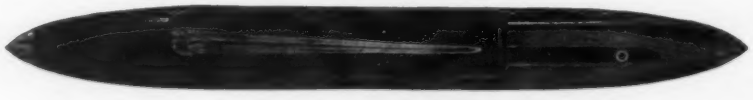
Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed.

Patented in the United States and all Foreign Countries



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered

U. S. Patents; 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

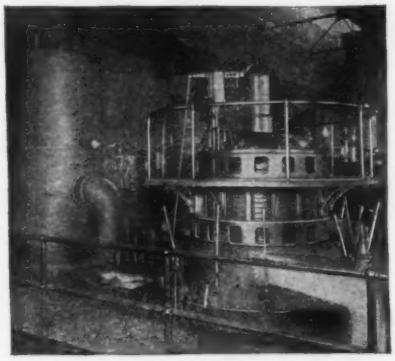
We also manufacture a complete line of

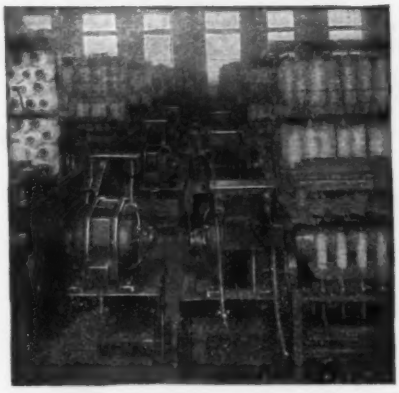
Paper Cop Tubes, Cones and Shells

Send your samples and we will quote prices on any lot desired

New York Office, 363-373 Rider Ave.

General Electric Company





Textile Mill Economics

Exhaust Steam Turbines—

in the power house afford a highly efficient means of utilizing the exhaust steam from reciprocating engines. Curtis Low Pressure Turbines utilize exhaust steam from 1 pound gauge pressure to any obtainable vacuum, and will add from 30 to 100 per cent. to the station output without using additional fuel. These turbines are available in standard sizes from 300 kilowatts up and possess the same characteristics of operation that have made the Curtis Steam Turbine the peerless prime mover.

Induction Motors—

in the mill result in reduced operating and maintenance costs, besides increasing the output and quality of the product. Reduced building expenses and increased working space also follow as direct results of the adoption of electric drive. This is due to the elimination of heavy and bulky line shafting and the consequent lighter construction materials required. Of the total power supplied through electric motors to textile mills in this country, 75 per cent. is delivered by G. E. Motors. There's a reason.

G. E. Magda Lamps—

in every part of the mill will give you the same amount of illumination as ordinary incandescent lamps, but will use only one-third as much current. If you want to get more light without increasing your light bill, or if you want to relieve your overloaded lighting plant, G. E. Magdas will help you. Furthermore, the quality of the light given by G. E. Magda Lamps is almost equal to daylight—the ideal light for textile mills. These are good points to remember when you are considering the lighting question.

Mill Power Dept.
84 State St.
BOSTON, MASS.

Principal Office:
SCHENECTADY, N. Y.

Sales Offices in
All Large Cities

1994

Darrow-Mann Co.

30 KILBY STREET, BOSTON, MASS.

Anthracite=Bituminous=Gas Coals

Tidewater Agents For

New River Coal Co.'s

NEW RIVER COAL

SHIPPING PORTS:

Sewall's Point
Virginia

Newport News
Virginia

ANALYSIS

Washington, D. C., January 5th, 1910

Gentlemen:

The following is the report of analysis of a sample of NEW RIVER coal taken from the cargo loaded aboard the Collier HANNIBAL at Sewall's Point, Va., December 11th, 1909, and supplied by your Company under Requisition No. 62.

Moisture	.92
Volatile Matter	18.21
Fixed Carbon	77.03
Ash	3.84
	100.00
Sulphur	.62
B. T. U.	15008

By direction of the Paymaster General

Respectfully, (Signed) C. J. PEOPLES
Paymaster, U. S. Navy
In charge of the contract section.

New River Coal Company,
Richmond, Virginia.

Number 2. BUCKWHEAT Number 3.

Shipments All Rail and Tidewater.

Starch

Eagle Finishing Starch is especially made for penetration of warp yarn. Dissolves easily in size kettle, makes smooth paste and is strong. Does not lose strength but holds up in kettle and size box. Penetrates and dries easily, gives smooth yarn, separates and draws in quickly, less breakage and increased production on loom.

If you want to know what we can do for your mill in better results and increased production write

CORN PRODUCTS REFINING CO.
NEW YORK

Starch

FOR

Woolen & Worsted

THE FISHER PATENT CARD FEED

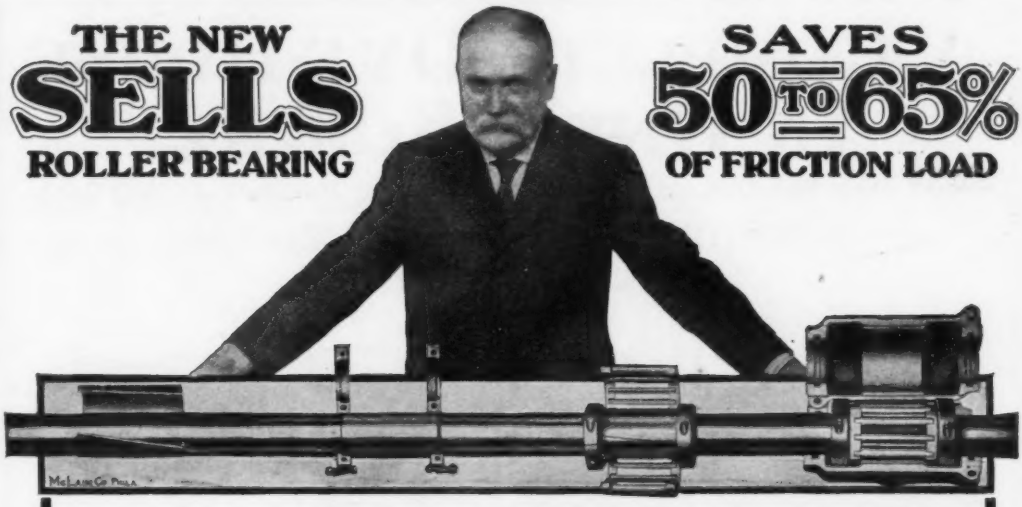
Woonsocket Machine and Press Company

Woonsocket, R. I.

Southern Representative:
J. H. MAYES
1112 Realty Bldg., Charlotte, N. C.

THE NEW
SELLS
ROLLER BEARING

SAVES
50 TO 65%
OF FRICTION LOAD



Here's a Way to Make a Big Cut in Your Overhead Cost

You often wonder how in thunder the other fellow manages to beat you out on price when he seems to be putting practically the same stuff in his proposition you are in yours. The only logical solution is that his cost of production is less. He takes advantage of every possible way to cut the cost.

Here's One of the Ways.

You can reduce your friction load 50 to 65%—he probably has. Here's how—

The **more** friction you have on each bearing throughout your plant, the **more** power you require to operate and the **more** power you need, the **more** steam and therefore the **more** fuel.

Now—go back—cut your friction load 50 to 65%—you need **less** power—**less** power means **less** steam—**less** steam, **less** fuel—what's the answer?

Sells Roller Bearings Reduce the Friction Load 50 to 65%, not as an exception—AS A RULE!

AND they can be fitted to every hanger, post hanger or pillow block in your plant without changing a single detail of your present equipment.

Sold Now for 50% Less Than Any Roller Bearing on the Market, Plus 50% Less Friction Load

ISN'T THAT PRETTY NEAR A 100% PROPOSITION?

TEAR OUT THIS AD—Before you forget. Ask us for the other advantages which make this great saving possible. If there's any special difficulty you are up against, let us help you solve it. If you have any doubt about the smallest detail of our proposition—don't make a hasty decision—put it up to us.

DO IT RIGHT NOW!

Royersford Foundry and Machine Co., Inc.

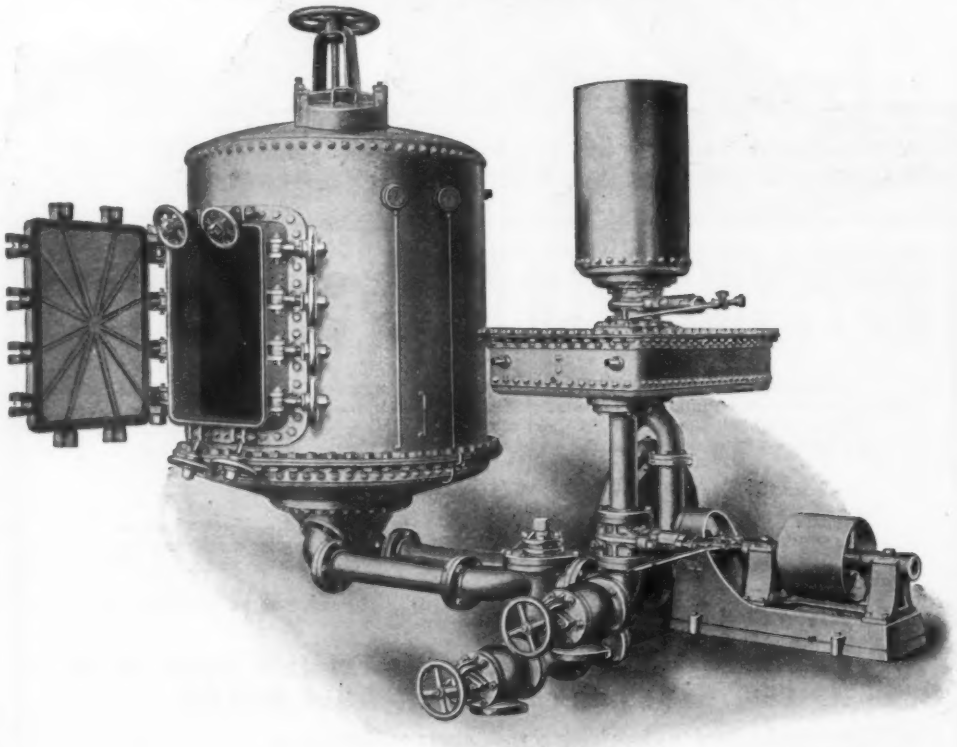
Manufacturers of Power Transmission Machinery, and
Punching and Shearing Machines

56 North Fifth Street, **PHILADELPHIA, PA.**

A COMPLETE DYE-HOUSE IN ONE MACHINE

Colored Goods Manufactured by use of same Winding Processes as Grey Goods

ELIMINATES SKEIN WINDING and WARPING



FRANKLIN DYEING MACHINE

(Patents pending in the United States, Canada and principal Foreign Countries)

For COTTON, WOOL and WORSTED YARNS

Dyes Cotton in the Lap—Wool in Card-Ball—Worsted in the Top

MACHINES IN PRACTICAL OPERATION IN MILLS DEMONSTRATE A

Saving of 25 to 30 % in Dye-Stuffs and 75% in Labor Cost

NO HYDRO-EXTRACTOR REQUIRED

FRANKLIN PROCESS COMPANY

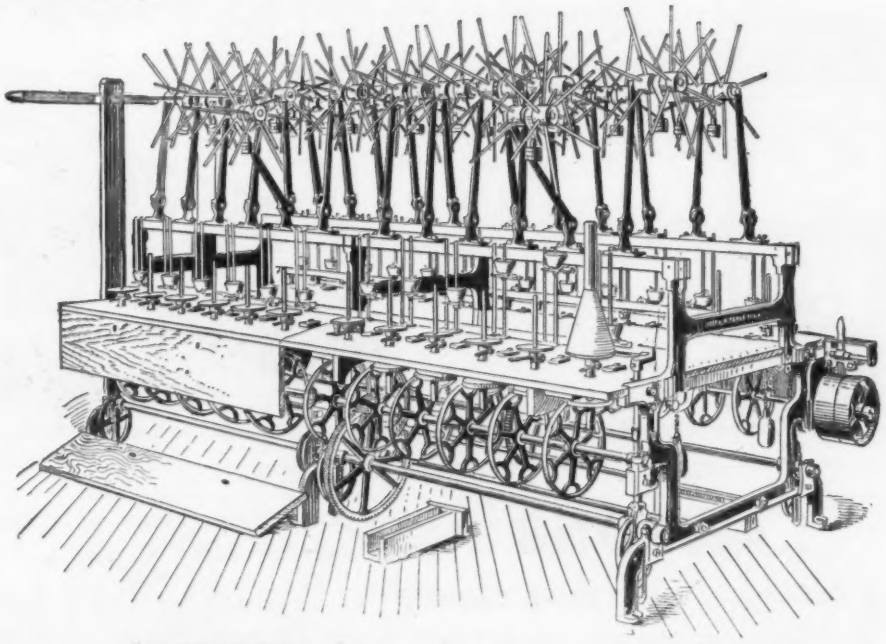
P. O. Box 465 Providence, R. I.

F. E. ATTEAUX & CO., Inc., Selling Agents, 176 Purchase St., Boston, Mass.

Don't form any adverse conclusion until you know

What Our **1910 Winder** Will Do For You

and then do not condemn it until you see or know what you condemn it for.



It will wind { SOFT COTTON YARN, WOOL YARN, WORSTED YARNS, FINE COTTON YARN }

Time for Winding One Skein of Yarn 6 minutes and less.

Will wind more yarn with 6 spindles to each operator than can be done on 10 or 12 spindles of any other machine.

Saves Floor Space. Saves Waste. Saves Cost in Winding. Takes Nominal Power. Will Make Good Hard Bobbins.

These features are worth considering and we hope to hear from you.

Also Builders of Warpers and Spoolers for Rib Frame Warps.

Yours Respectfully,

JACOB K. ALTEMUS, Textile Machinery

2824 No. 4th Street, Philadelphia, Pa.

SMITH, DRUM & CO.

"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

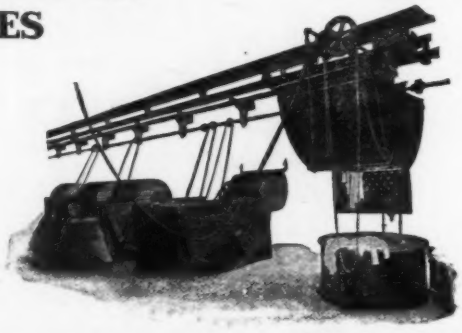
SAVE LABOR and **DYE STUFF** and do **BETTER WORK** in your dye house by using

SMITH, DRUM & CO. MACHINES

Full Particulars on Application

CORAL AND CUMBERLAND STREETS

PHILA., PA.



LAWSONS

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery for the Manufacture of Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

The Best Kind of Fire Protection

Fireproof construction is better fire protection to a building than any amount of fire insurance. By covering your factory with J-M ASBESTOS ROOFING it will protect it from fire at no extra cost. It has the highest fire-resisting properties, because made of a fireproof, indestructible mineral—*Asbestos*. No other roofing on the market offers such protection as

J-M Asbestos Roofing

Other ready roofings are made of wool felt, rag stock, paper, shoddy, coal tar and other highly inflammable materials, which are an actual menace to a building instead of a protection. J-M ASBESTOS is "the cheapest per year" roofing because it requires no coating or painting to preserve it. The first cost is the only expense. It resists fire, rot, rust and wear and is the only *permanently durable* prepared roofing. Adapted to all climates and weather conditions.

Write nearest Branch for Samples and Catalog—or simple write your name and address on margin of this advertisement and mail it to us.

H. W. JOHNS-MANVILLE CO.

ASBESTOS

Manufacturers of Asbestos and Magnesia Products
Asbestos Roofings, Packings, Electrical Supplies, Etc.

Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Kansas City, London, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburg, San Francisco, Seattle, St. Louis

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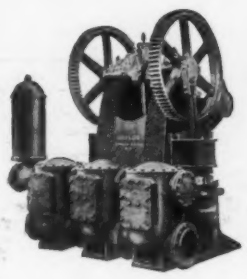

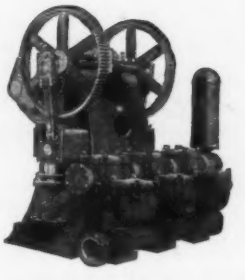

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Triplex Power Pumps

Possess many important advantages over all other styles. Our entire organization has been specializing on Power Pumps for more than a score of years. As a result, Goulds Triplex Pumps are today the most efficient and economical apparatus for service around mills, factories, power stations, etc. We build them for every duty.

Our catalog will afford you some interesting and profitable reading, May we send it?

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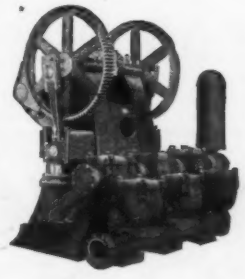
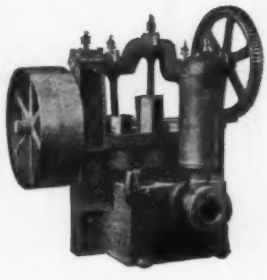
62 W. Fall St., Seneca Falls, N.Y.

New York, Boston, Philadelphia, Pittsburg, Chicago, St. Louis, Denver, Seatt'e Portland, Spokane, Los Angeles, San Francisco, Jacksonville, Charlotte, New Orleans, Montreal, Toronto.





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SALEM, MASS.

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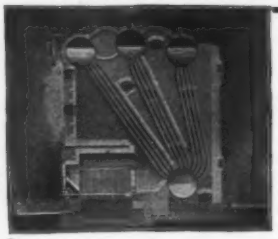
ESPECIALLY ADAPTED FOR MILL USE.

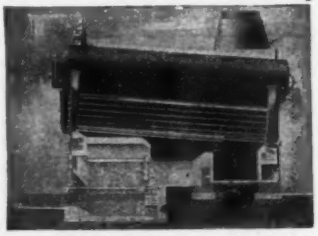
SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.



The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.

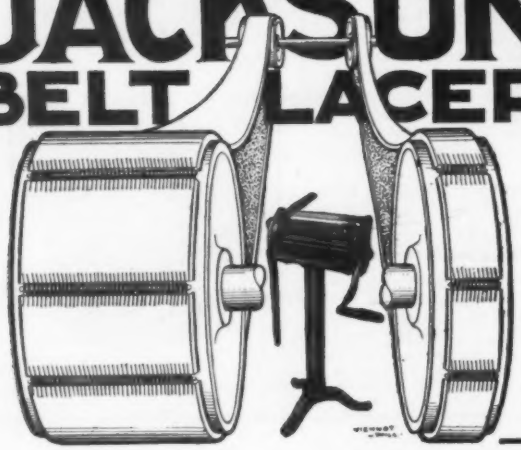


SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

MURPHY IRON WORKS

DETROIT, MICH.

JACKSON BELT LACER



BROAD OR NARROW, HEAVY OR LIGHT; IT'S ALL THE SAME WE LACE THEM TIGHT

The Jackson Belt Lacer is the acme of time saving perfection, because one man can carry the lacer to the work and lace the belt right on the spot in less time than it takes to tell.

And after the joint is made, it stays; again you save time—by never having to repair that same joint.

Just because it's strong, don't think it's stiff; it's as flexible and flat as the rest of the belt.

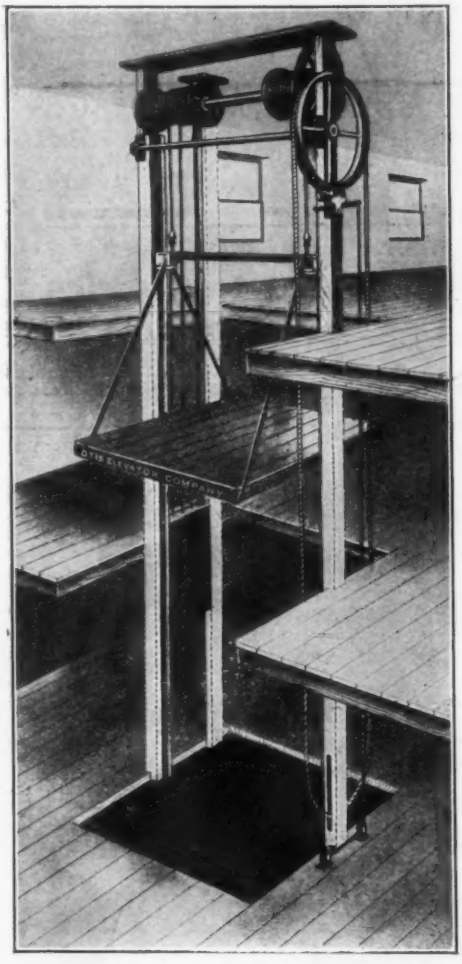
Birdsboro Steel Foundry and Machine Co.

Birdsboro, Pennsylvania

ELEVATORS

FOR

TEXTILE MILLS!!



OTIS Hand Power Elevators

With Steel Frame Platform

$75.00 to $95.00

50% Better than the Old Wooden Kind

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OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD

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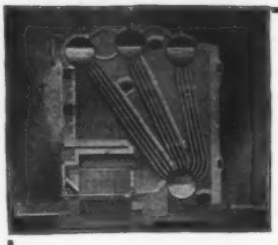

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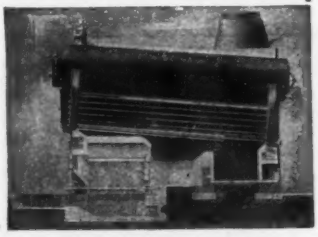

SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

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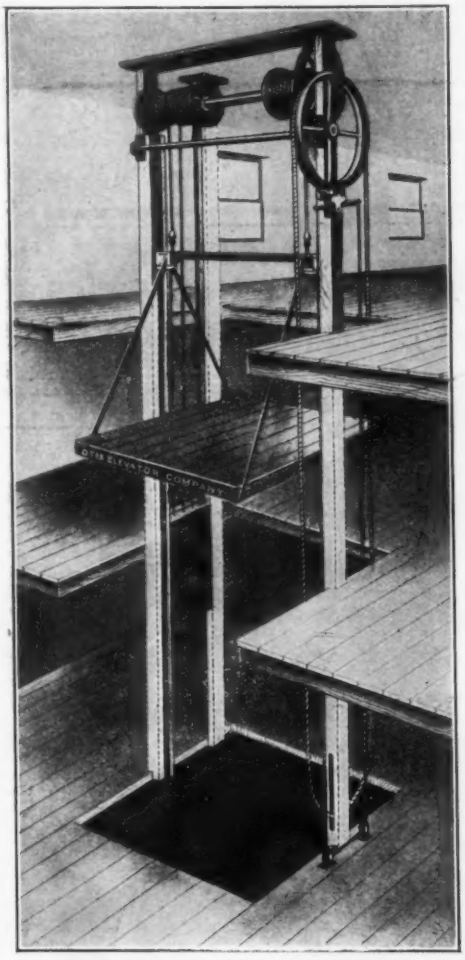

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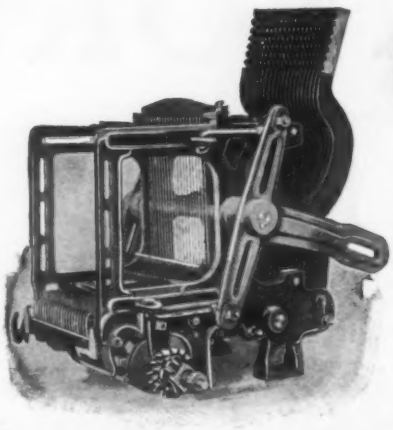

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are best adapted to every requirement—always the leaders in efficiency and economy.

We apply them to any and all makes of looms.

Crompton & Knowles Loom Works

Worcester Providence Philadelphia

The accompanying illustration shows the **Palmer** adjustable thread guide for spinning and twisting. This guide is **Adjustable** in all directions and can be rigidly and permanently fixed. **Thread** boards and rails of metal which are expensive are not necessary with this **Guide**

Patented

SEND two clappers for free samples for circular.

The Palmer Revolving Guide for Wet and Dry Twisting

Lays the fiber closer
Makes a smoother twist
Saves power
Will outwear many wire guides

Patented

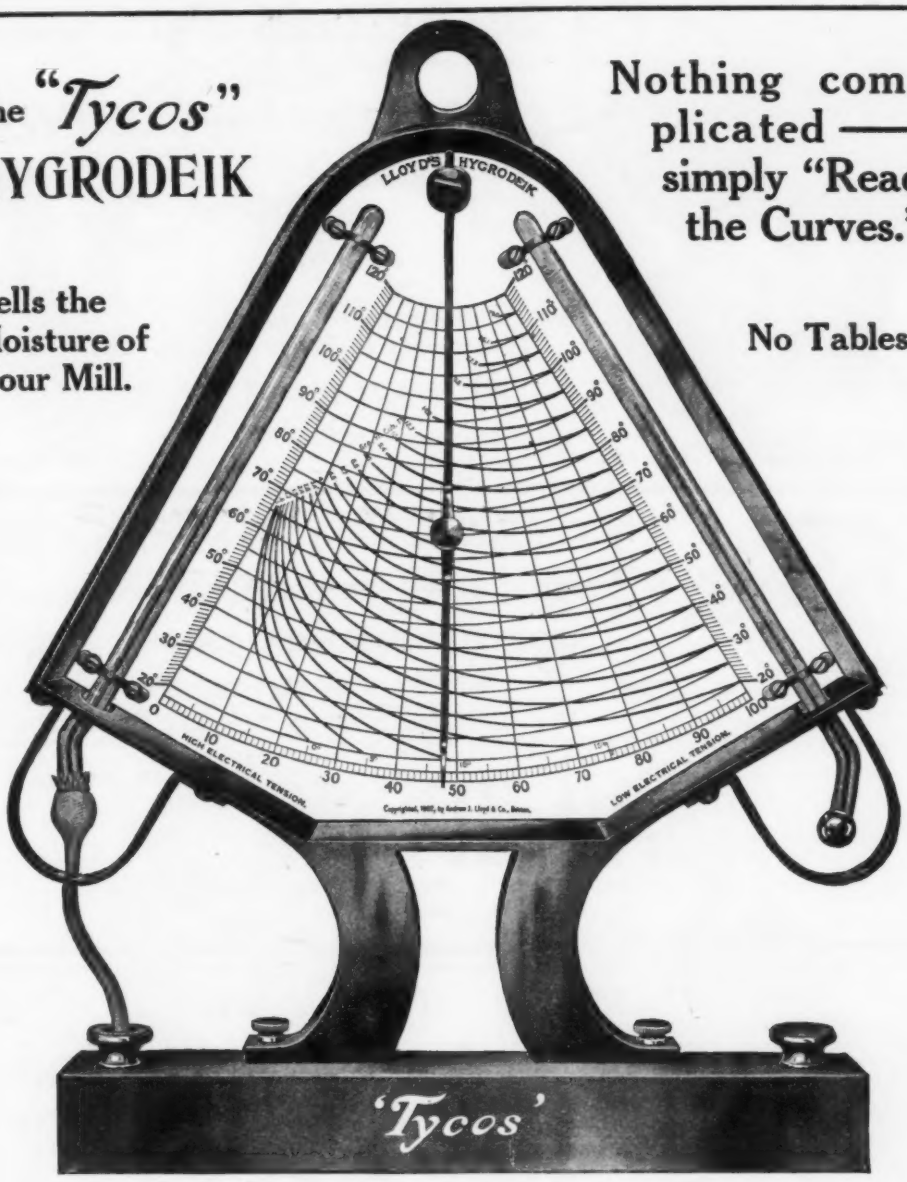
THE I. E. PALMER CO., **Middletown, Conn.**

The "*Tycos*"
HYGRODEIK

Tells the Moisture of Your Mill.

Nothing complicated —— simply "Read the Curves."

No Tables



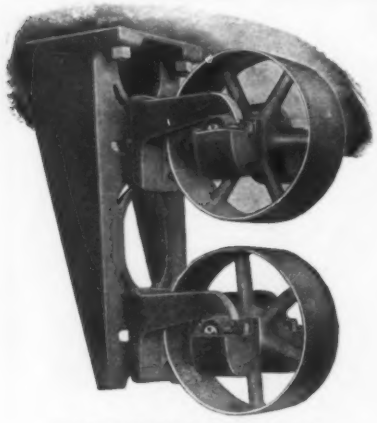
We will gladly give you more detailed information, if you will give us an idea you are interested. May we send you booklet?

The Hohmann & Maurer Division
Taylor Instrument Companies

BOSTON
42 High Street

Rochester, N. Y.

NEW YORK
85 Chambers Street



Adjustable Binder Frame for belt drives to Spinning Frames, Twisters, etc.

WM. SELLERS & CO., Incorporated

Philadelphia, Pa.

Makers of

Shafts,
Couplings,
Pulleys,
Hangers,

and all most approved appliances for the

Transmission of Power by Belts, Gears or Ropes

Catalogue upon request.

Machine Tools,
Injectors,
Power Cranes.

You don't have to declare a holiday and shut down the shop when you put up

THE AMERICAN STEEL SPLIT PULLEY

All that's needed is a wrench. More than a million American Steel Pulleys in use—saving time, trouble and money for their owners.

American Steel Pulleys are sold by supply houses throughout the world.

Catalog on request.

THE AMERICAN PULLEY CO.

MAIN OFFICE & WORKS PHILADELPHIA, U.S.A.

Chicago Branch, 124 S. Clinton St.

FIG. 20.

If you have not used a

Lane Canvas Box, Basket or Truck

in your mill, you have yet to learn what highest grade material and superior methods of construction and workmanship, as exemplified in the Lane product, can do to remove your basket troubles.

Sold direct or through principal Supply Houses.

See our Descriptive Catalog and Price List No. 37.

MANUFACTURED ONLY BY

W. T. Lane & Brother, Office & Works Poughkeepsie, N. Y.

CRESSON

POWER TRANSMITTING MACHINERY

RING OILING HANGER
"PHILADELPHIA PATTERN"

Shafting Pulleys
Couplings Fly Wheels
Hangers Gears

Rope Driving a Specialty

Power Plants Designed and Equipped

Prices Right Shipments Prompt
Catalogs for the asking

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SPLIT PULLEY

GEO. V. CRESSON CO.

ENGINEERS FOUNDERS MACHINISTS

PHILADELPHIA, PA.
Allegheny Ave., West of 17th St.

NEW YORK CITY
90 West Street

PHILIPS

DID YOU EVER SEE THIS?

It is the most important reason why "The Philips Solves your Pulley Problem."

What is the most valuable quality of a pulley?—Belt Contact, isn't it. The more belt contact, the more power transmitted.

Well the **Philips** Rim is all belt contact—**100 per cent. contact.**

Compare with other split steel pulleys—The Philips is the only split steel pulley having a perfectly smooth, unbroken crown face—**LOOK AT THE CROSS SECTION OF THE RIM WHERE I AM POINTING!**

See how it is formed? From one solid sheet of steel drawn in toward the centre where the two ends project at right angles and form the rigid central rib to which the arms are riveted.

Another point:—The above construction gives us two thicknesses of metal flanged on both edges, (see where I am holding my left hand?) In forming the central rib we "tie" the ends of the sheet rigidly together, completing a construction that is the acme of strength.

What is the Result?—simply this:—

Lateral strain, which distorts pulleys of less strength, is completely taken up, either side of the rim being reinforced by the other.

If you think that this is good but want to see if we can back it up in the other details; Arms, Hub, Rim Lugs, Bushings, etc, make us prove it!

Made in sizes up to 48 inch diameter by 16 inch face.

Agents in all principal cities.

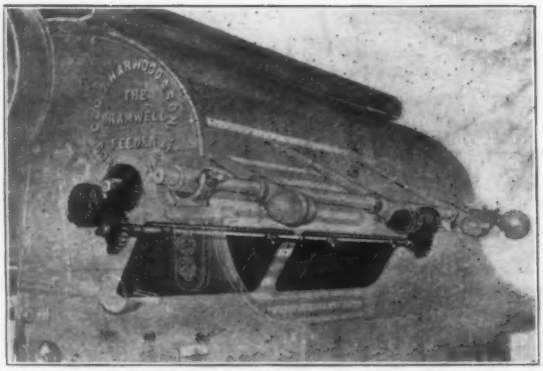
Make a note of this name and address right now, or tear out the ad. If this pulley is going to save you money, now's the time to find out—Please write today.

PHILIPS PRESSED STEEL PULLEY WORKS, 337 Glenwood Avenue, Philadelphia, Pa.

THE GEB COMPENSATOR

For Bramwell First Breaker Card Feeds

Secures Even Feeding



Prevents Sorting of Stock

We are the Feeder Specialists

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Cloth Washers, Dye Tubs, Vats, Fulling Mills,
Piece Dyeing Machines, Special Machinery,
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Hopkins Machine Works, Inc.

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Spindles and Flyers, for Cotton, Wool, Silk, Flax, etc.

Send for our latest Catalogue and Price List

Dye Tub Valves, Cloth Guides, etc. Bronze or Porcelain Rings.

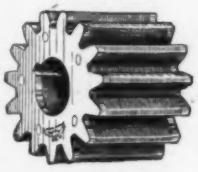
ALL THE NOISE WE CAN MAKE ABOUT NEW PROCESS NOISELESS PINIONS

is not half so convincing as the silent testimony of thousands of New Process Pinions and Gears themselves in plants where noiseless drives have come to stay.

There are two ways of arriving at satisfaction when you are after noiseless gear drives—getting New Process Pinions at the start or getting them later.

No metal to metal arrangement will remain noiseless. Even where new and well lubricated, metal to metal will not be nearly so quiet as where one of the gears is replaced by a New Process Noiseless gear.

New Process Rawhide, as used in our gears and pinions, is the product of our own hide plant and our own special methods of curing. We are pioneers in the rawhide gear industry, and our product is supreme in density, hardness and toughness. You want only those rawhide gears that work and wear well. You may be able to get other rawhide that will work, but you can't find any that will wear like New Process Rawhide. You need no better evidence of this than the constant repeat orders that we receive from the United States Government.



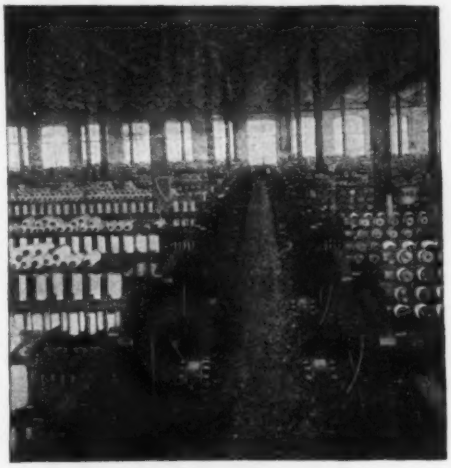
Better start with New Process Pinions. It is cheaper in the long run. Ask your friends.

Shall we send booklet?

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

The NEW PROCESS RAW HIDE Co.

OFFICE & WORKS N.P.R.H. SYRACUSE, N.Y.



The frames in this spinning room are driven by Westinghouse Textile Motors

They are part of an installation of 124 motors of the same type in this mill, one of the largest in New England. Westinghouse Individual-Motor Drive was adopted because of the acknowledged advantages accruing, such as an increased product of a better quality, greater economy of operation, elimination of all shafting and belting, and flexibility of power transmission.

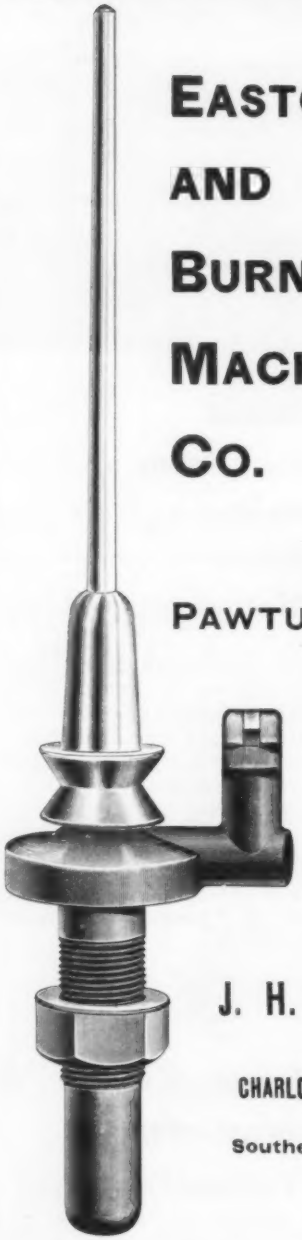
Ask for a set of "Textile Motor Talks"

Westinghouse Electric & Manufacturing Co.

Pittsburg, Pa.

Atlanta Boston Charlotte New York Philadelphia and other large cities

SPINDLES



EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

J. H. MAYES,

CHARLOTTE, N. C.

Southern Agent.

"NO WASTE"

Is the name of the only

Seamless Hard Fibre Roving Can

MADE FROM PURE CHEMICAL HARD FIBRE

NO SEAMS or RIVETS

Absolutely Smooth

No Waste or Broken Ends

Write for prices.

MANUFACTURED BY THE

Standard Fibre Co.

SOMERVILLE, MASS.

BATES

MODEL 49A

is the best Numbering Machine on the market. And it is the most inexpensive. For while other machines of its capacity sell from $10 to $16, this one is priced at $5.

Price $5.

Operates consecutively, duplicates and repeats. Capacity 1 to 999,999. Weighs but 12 ounces. Is self-inking. Works rapidly, noiselessly, surely and will last for years.

10 Days Free Trial

You can have a machine on 10 days free trial without obligating yourself in any way. Simply write us a note saying you would like to try a machine. One will be sent you immediately, all charges prepaid. Write us to-day, now.

The Bates Machine Co.

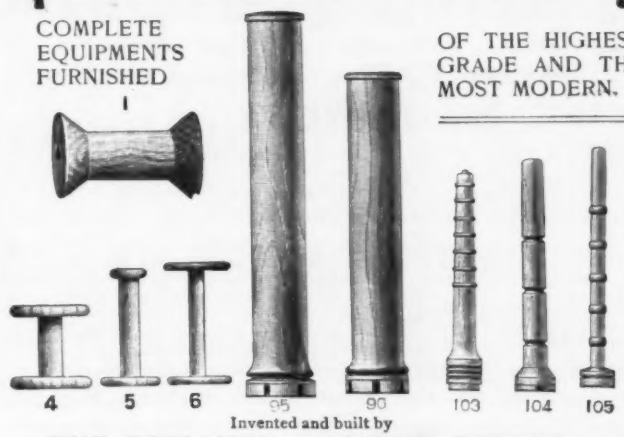
696-710 Jamaica Ave.

Brooklyn, N. Y.

Spool and Bobbin Machinery

COMPLETE EQUIPMENTS FURNISHED

OF THE HIGHEST GRADE AND THE MOST MODERN.



Invented and built by

THE DEFIANCE MACHINE WORKS,

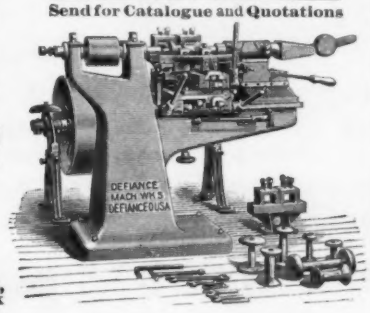
DEFIANCE, OHIO

Also, Automatic Machinery for Making

AUTOMOBILE SPOKES, RIMS, WHEELS and BODIES, CARRIAGE and WAGON HUBS, SPOKES, RIMS and WHEELS, WAGONS, CARRIAGES, SHAFTS, POLES, NECK YOKES, SINGLE TREES, HOOPS, HANDLES, INSULATOR PINS, TABLE LEGS, SHOE LASTS, BALUSTERS, OVAL WOOD DISHES and for GENERAL WOODWORK.

Automatic Bobbin Lathe.

Send for Catalogue and Quotations



Automatic Spool Turning Lathe.

One Man doing the Work of Four.

A Triplex Block suspended from a Trolley, in use on an overhead crane for lifting heavy cases in a warehouse.

THIS picture shows a Triplex Block saving three men's labor in the handling of heavy cases. But any manufacturer can imagine Triplex Blocks handling other heavy articles and serving a hundred useful purposes, — setting machinery, transporting bales of cotton, taking off a cylinder or setting a dynamo,—and he can see the same saving in labor and money.

The trolley shown is simple, inexpensive and easily put in place. Switches and branches make it possible to move loads in any direction without any trouble.

And the Triplex Block doesn't wear out,—it is the strongest, simplest Hoisting mechanism made, and when you install one you have made a permanent investment that produces a permanent income.

You may have one to try by just asking us.

CHAIN BLOCKS { **4 Styles:** Differential, Duplex, Triplex, Electric. **42 Sizes:** One-eighth of a ton to forty tons. **200 Active Stocks** ready for instant call all over the United States } *The Book of Hoists tells much—for a postcard.*

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Only Makers of Genuine *Yale Locks*

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TEXTILE MACHINERY

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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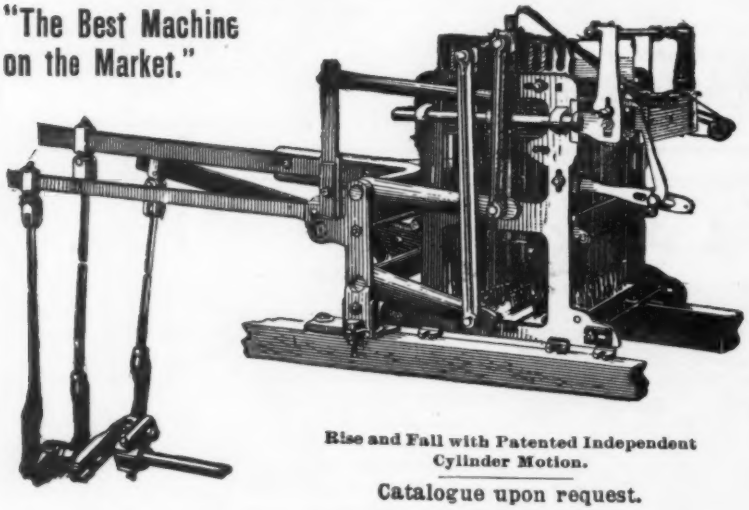
Pick Classes, Leather Aprons, Patent Wire Chain Aprons, Etc.

"The Best Machine on the Market."



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Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

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Improved Warping and Beaming Machinery

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For Cotton and Woolen Goods.

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Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

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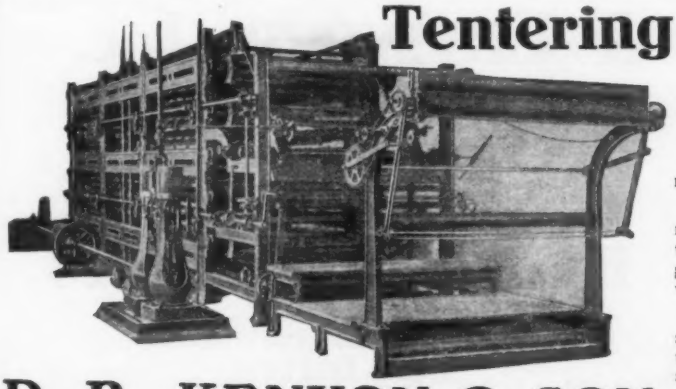
The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for booklet "T" on Humidification. Legal proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Trust Bldg., **CHARLOTTE, N. C.**

Tentering and Drying Machine



The cut represents one of our largest machines of the pipe system.

The wet goods in transit through the machine are thoroughly dried and tentered to the proper width. Although goods entering may be of various widths, all delivered are uniform.

The machine uses but a small amount of steam, and being substantially constructed, the repair bill is almost a negligent quantity.

It is equally efficient for heavy as well as light goods, either wide or narrow.

D. R. KENYON & SON
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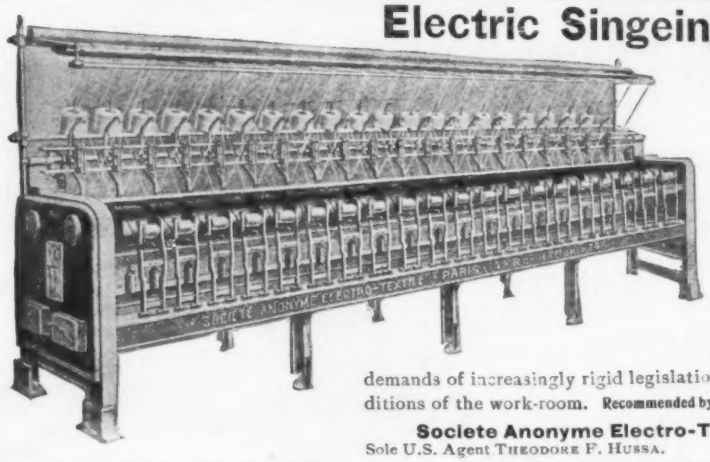

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We lower your cost of production from 30 to 60%.

We produce yarns of finer quality.

We produce yarns of better color.

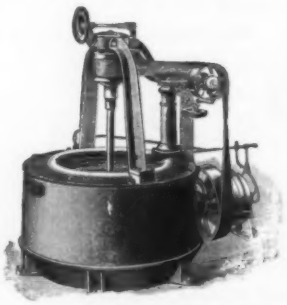
We give you cleaner, safer work-rooms.

Simple to operate.

The only machine that allows manufacturers to meet the demands of increasingly rigid legislation controlling the health conditions of the work-room. **Recommended by the Commissioners of Labor in France.**

Societe Anonyme Electro-Textile, Paris, France.
Sole U.S. Agent THEODORE F. HUSSA. 136 Liberty St., New York City.

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs



Adjusts itself to an uneven load, runs without vibration
Unusual capacity for high-class work

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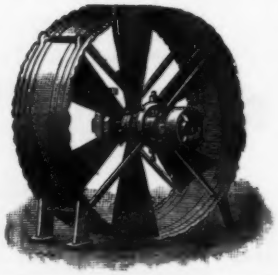

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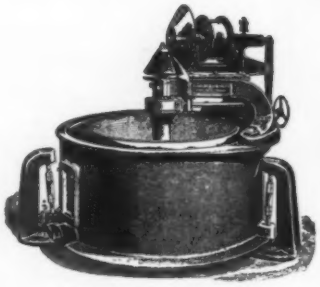

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Self Balancing

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Ask for Book Giving Full Particulars

Established 1841.

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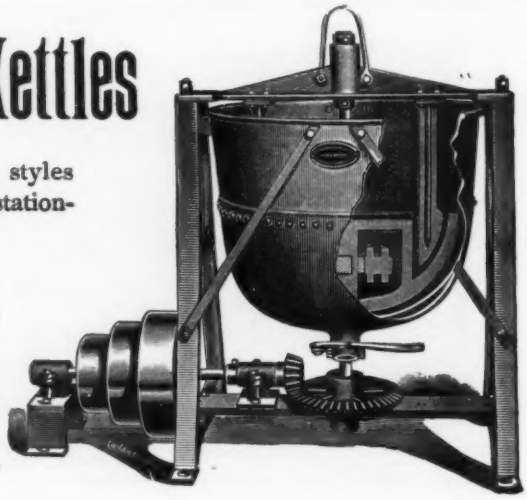
This cut represents one of our many styles of steam mixing kettles, made with stationary and removable stirrers.



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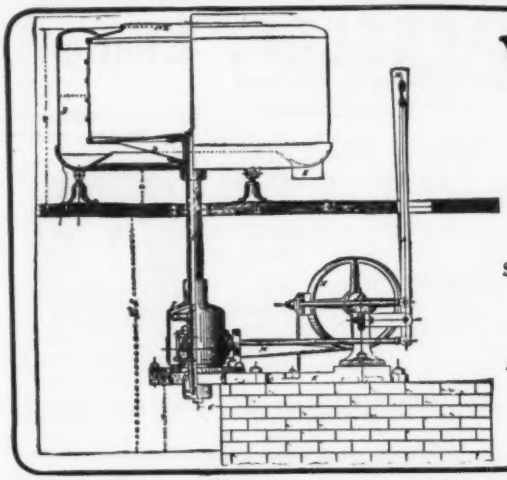

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Special Machines for Acid Work.

SHAFTING, PULLEYS,
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American Tool and Machine Co.

Incorporated 1864. Founded 1845.

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K-A Electrical Warp Stop

IS ACTIVE AND UP TO DATE

SUBSTANTIAL EQUIPMENTS NOW IN PROCESS.
REPEAT ORDERS ARE ENDORSEMENTS OF MERIT.
COMPARISON WITH OTHER WARP STOPS INVITED.
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K-A Dept. Mossberg Wrench Company
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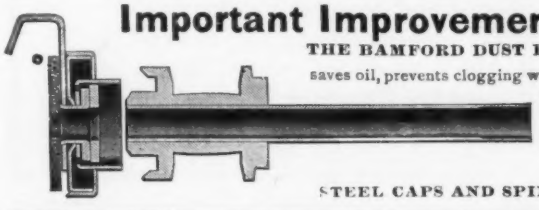

Important Improvement in Worsted Spinning.

THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE

saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

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The great American invention for counting of threads in textiles. Used by the **appraiser** of the **Port of New York**; also in **Quartermaster's Dept.**, Phila., to examine goods purchased by the U. S government.

No thread counting glass in the world combines the magnifying powers and other distinctive features of this instrument.

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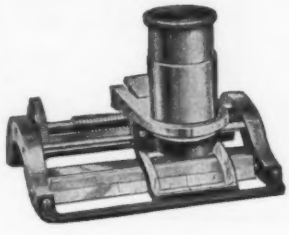

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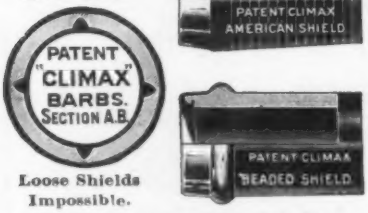
Absolutely secure combination of Shield and Bobbin guaranteed



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Wool Washing and Carbonizing Machines.

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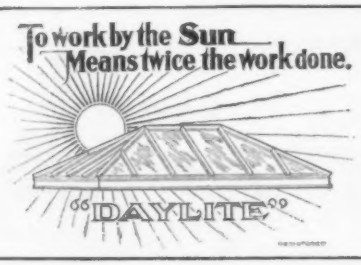

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Applicable wherever overhead light is desired

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Is always in order.

The Time For Ventilation Is

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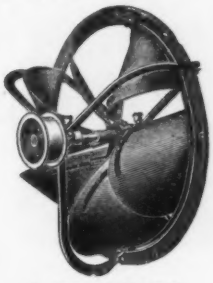
There is yet one more winter month

Remember! The BERRY WHEEL accomplishes both

This is our Berry Wheel the most effective agent for drying, eliminating steam and other impurities in the atmosphere.



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For QUALITY OF FINISH
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THE BIRCH COTTON FINISHING MACHINERY

Scutchers	Washing	Sewing
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SOMERVILLE MACHINE WORKS SOMERVILLE, MASS.

ALBERT BIRCH, Textile Mechanician. No Connection With Any Other Concern.

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for WOOLENS, WORSTEDS, FELTS, etc.

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ESTABLISHED 1826

CLOTH FINISHING MACHINERY

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NAP	GIG	BOIL	WIND	ROLL	SET
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MOISTEN	INSPECT	MEASURE	YARDMARK	SHRINK	STRETCH
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Is not to furnish a puzzle to be solved, but a sign by which a given commodity may be recognized.

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Samples on request.

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Our Patented Metal Protected Spool Is Making Good

- ¶ Triples the life of the spool.
- ¶ Will not rust.
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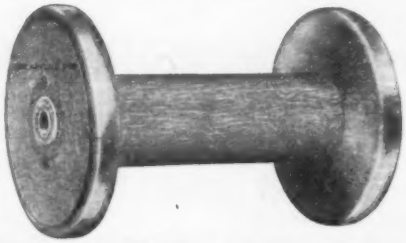
- ¶ Protects the outside and inside.
- ¶ Made in all styles and sizes.



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- ¶ Weighs about one ounce more than an all-wood spool.
- ¶ Samples and particulars sent on request.

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Works at Orange, Mass.
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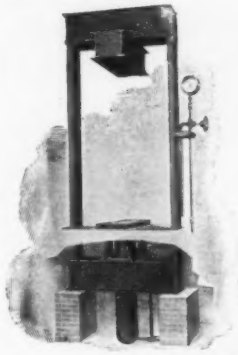
Improved Fulling Mills Washers & Dyeing Machines



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A practical test will convince you we can furnish the

BEST
COTTON, WOOLEN and WORSTED
CARD CLOTHING

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DEAN BROS. STEAM PUMP WORKS

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DUPLEX PUMPS, SIMPLE PUMPS
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VERTICAL AIR PUMP AND JET CONDENSER

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DE LA VERGNE
Crude and Fuel Oil Engines

BUILT IN SIZES UP TO 250 H. P.

ECONOMICAL and RELIABLE

THAT IS WHY THESE ENGINES HAVE BEEN REPLACING STEAM AND ELECTRIC POWER FOR THE PAST
14 YEARS

OVER 14,000 IN USE

Write for Particulars and Catalog B to

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FOOT OF EAST 138th ST., NEW YORK

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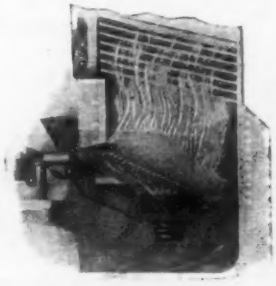

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Sole Agents, N. Y., N. J., Pa.
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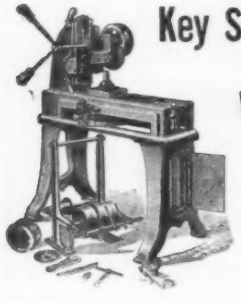
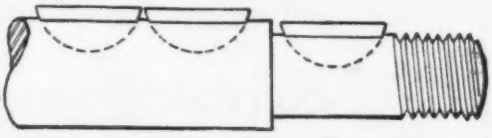


Key Seating Attachment
FOR
Whiton Gear Cutter



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THE IMPROVED FISHKILL CORLISS ENGINE
BUILT BY THE FISHKILL LANDING MACHINE CO.
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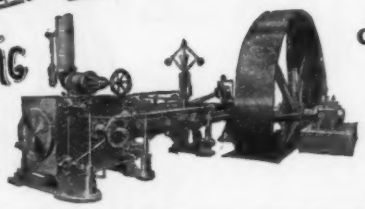

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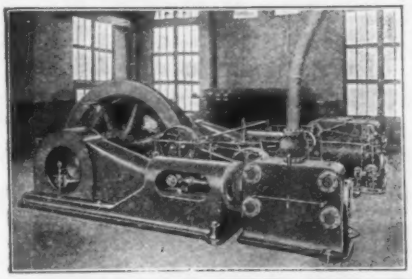

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Heavy Duty Type
NOTED FOR
RELIABLE SERVICE,
LOW STEAM CONSUMPTION,
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Designed and built by
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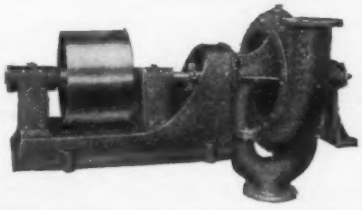

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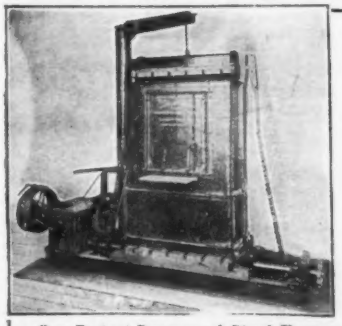

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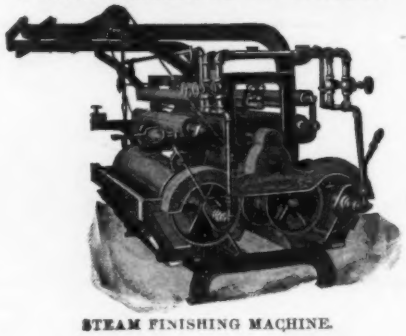

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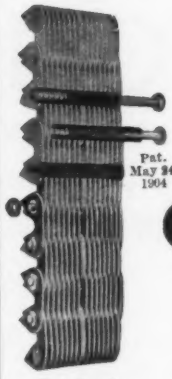

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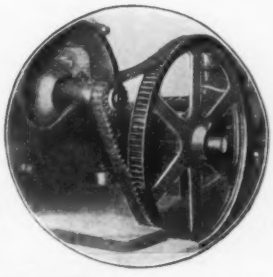

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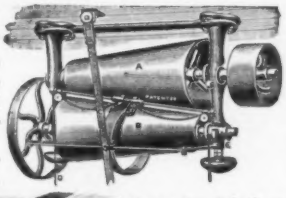

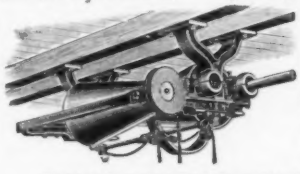

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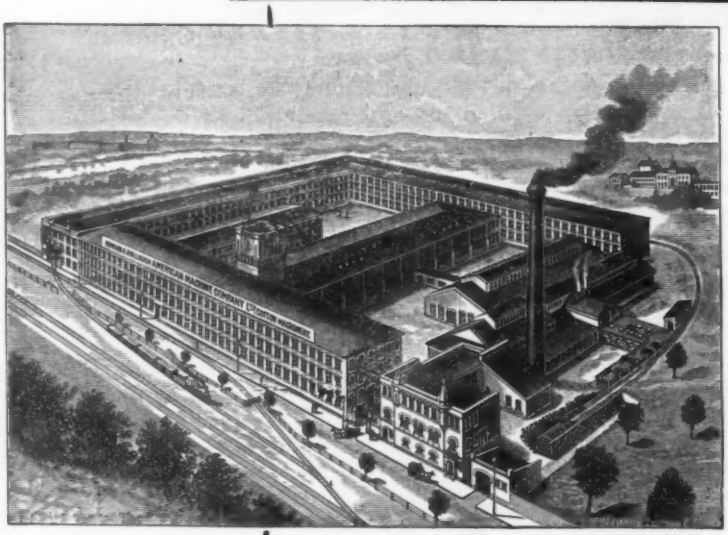

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TEXTILE WORLD RECORD

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VOL. 39 (NEW SERIES.) April, 1910 No. 1

Monthly Comment.

Lancashire and Cotton.

The "Textile World Record" suggested some time ago that Lancashire should direct its energy and capital to raising more cotton in the Southern States. . . . Perhaps there is something in this, but some things are only theoretically possible, and we fear that one of them is a stream of emigration to the Southern States headed by "Lancashire."—Manchester Guardian.

Our suggestion carried with it no such impracticable proposition as that advanced by the "Guardian." The idea of transporting Lancashire mill hands to the Southern States to engage in the raising of cotton is so absurd as to deserve no consideration. What we have tried to make Lancashire understand is that any considerable increase in the American cotton crop can be brought about only by white emigration into the Southern States. By our contrast of the shortage of labor in the South with the large number of unemployed in Lancashire we desired to show first, that the people of the earth were making the mistake of developing cotton spinning and neglecting cotton growing; and second, that the surplus labor of Europe should be diverted to the growing of American cotton in order to maintain the orderly balance of production in the various departments of the cotton trade. That labor should as a matter of course be supplied by those trained to agricultural pursuits. And such transfer of European farm laborers to the American cotton belt will by a rearrangement of conditions in Europe result in an increased demand for the labor of all of Europe's unemployed, whether the latter have been trained to spin cotton in Lancashire or cut diamonds at Amsterdam. Lancashire should think this over.

Importing Wool on the Skin.

A recent decision by the U. S. General appraisers involved an interesting dispute regarding the method of determining the weight of wool on imported sheep skins. The importers, Schoell-Kopf, Buffalo, N. Y., claimed that the weight as found by the collector was excessive, and appealed to the General Appraisers, who overruled the protest in the following decision:

The merchandise in question consists of 100 bundles of sheepskins entered as 17,383 pounds of skins and 14,223 pounds of wool. . . . The appraiser estimated, under the regulations prescribed by the Secretary of the Treasury, the quantity of wool that said skins would yield by shearing the wool from one of the skins contained in each of ten bales selected by a representative of the protesting company, and found 75.4 per cent. of the total weight to be wool. An allowance of 5.4 per cent was made for foreign matter, leaving 70 per cent., on which basis duty was assessed on the importation. Protest was lodged against the quantity of wool so returned by the appraiser, and in support of importers' contention testimony was produced showing that said skins were placed in vats of water, where they remained about four days, then taken out and sulphate of sodium applied to the flesh side of the skins, and the wool

thereby removed. As a result of this process protestants state that they found 56 per cent. of the total weight to be wool, and on this basis they claim duty should have been assessed.

We think it reasonable to assume that wooled sheepskins which have remained in water four days, and the wool subsequently dried, would show a less percentage of weight of wool than if they were sheared and weighed in the condition imported. The difference in the quantity of wool returned by the appraiser and that found by the importers is accounted for by the methods employed to obtain the respective result; and we have no reason to doubt the correctness of either. But, inasmuch as duties are to be assessed on merchandise in the condition imported, and as no error has been shown in the appraiser's return, we see no reason to disturb the assessment of duty by the collector.

Wool Imports.

For some unexplained reason the government report of imports for 1909, with amount of duty collected on each item, has been issued two months after the close of the year, instead of a year or more afterward, as has been the case in previous years. As a result we are able to give the following figures for the wool imports in 1909, while they still have something more than a purely historical interest:

Wool.	Quantities—lbs.	Values.	Duties.	Per cent.
Class 1—Unwashed, on the skin	1,547,881.00	$213,012.00	$154,788.10	72.66
" not on the skin	98,399,649.13	20,387,760.69	10,823,961.41	53.09
Washed, on the skin	41.00	6.00	8.61	143.50
" not on the skin	11,355.00	1,461.00	2,498.10	170.98
Scoured	79.50	38.00	26.24	69.05
Class 2—Washed and unwashed, on the skin	386,366.85	71,949 69	42,500.36	59.07
" " not on the skin	16,199,294.00	3,391,162.06	1,943,915.28	57.32
Scoured	31.00	49.00	11.16	22.78
Angora hair, washed and unwashed	1,299,552.50	456,045.00	155,946.30	34.20
Sorted	6,521.00	3,608.00	1,565.04	43.38
Class 3—Washed and unwashed, on the skin	864,778.60	62,383.71	25,943.35	41.59
" " not on the skin	76,807,986.00	7,865,221.00	3,072,319.44	39.06
Scoured	10,149.00	2,029.00	1,217.88	60.02
Camel's hair, Russian, washed and unwashed, on the skin	3,358,490.00	367,318.00	134,339.60	36.57
Washed and unwashed, on the skin, valued at over 12 cts. per pound	80.00	12.00	4.80	40.00
Not on the skin	9,541,859.65	1,780,106.00	667,930.18	37.52
Scoured	108.90	21.00	22 88	108.95
Washed and unwashed Camel's hair	782,103.00	155,727.00	54,747.21	35.16
Total Classes 1, 2 and 3	209,216,326.13	$34,757,909.15	$17,081,745.94	49.14
Advanced wool, at 40 cents	1,696.50	598.00	858.84	143.62
Advanced wool, over 40 cents	506.75	248.00	346.97	139.91
Advanced wool, over 70 cents	45.00	33.00	37.95	115.00
Total wool unmanufactured	209,166,371.38	$34,758,788.15	$17,082,989.70	49.15
Noils	127,965.00	49,754.00	25,593.00	51.44
Rags and flocks	32,773.00	9,232.00	3,277.30	35.50
Slubbing, ring and garnetted	10.00	2.00	3.00	150.00
Top and Roving	244.00	74.00	73.20	98.93
Yarn and thread wastes	89,601.00	35,737.00	17,920.20	50.14
Total rags, mungo, etc.	250,593.00	$94,799.00	$46,866.70	49.44
Yarns, wholly or part of wool, at not over 30c.	29.50	7.80	11.23	143.97
Valued at more than 30c.	299,224.35	246,331.56	213,734.18	86.77
Total yarns	299,253.85	$246,339.36	$213,745.41	86.77

In studying these figures it should be borne in mind that many of the items do not represent regular lines of trade. For example, the 11,355 pounds of Class 1 wool on which a duty of 170 per cent. was collected, was in all probability imported with the expectation of its being taxed at 11 cents a pound, and when it reached our shores was made subject to the double duty. This lot may easily have been included in the "matched" wool mentioned in our November, 1909, issue, page 206, which had

been held up by the customs authorities and taxed at 22 cents instead of 11 cents a pound.

Subsidized Top Mills in Australia.

Some time ago we noted the granting of a subsidy to worsted top mills by the Australian government, and the establishment of an Australian combing mill as a result of the measure. This mill was built by F. W. Hughes & Co., who had long been engaged in wool scouring. Their example has recently been followed by Whidden Bros., a firm of wool scourers and tanners, who are to build a combing mill for the Botany branch of their business. The government subsidy was authorized for a period of five years from 1908, the amount being 3 cents a pound for the first three years, and 2 cents a pound thereafter. Doubtless the success of the subsidy in building up the combing industry will lead to its renewal at the end of the first five years.

Marking the Weight on Wool Yarn.

A bill to require the marking of yarn with the weight, if less than four ounces in a package is offered for sale in interstate commerce, has been introduced in the House by Representative Calder of New York. Laws to the same effect are already on the statute books of a number of the States, but they do not prevent short-weight packages of yarn from being put up in one State and sold in another. The text of the Calder bill is as follows:

That every person, firm, or corporation engaged in the manufacture or putting up of wool or worsted yarns in balls, skeins, or hanks, weighing each four ounces or less, shall, before the same is introduced into interstate commerce, affix to each ball, skein, or hank, or, if wrapped, shall print upon the wrapper covering the same, the weight in ounces; also upon outside box or package the total weight of said wool or worsted yarns in pounds or ounces. Any person, firm, or corporation who shall affix to or print upon such ball, skein, or hank, or wrapper, box, or package, a statement of weight which shall be greater by five per centum or more than the true weight shall be punished by imprisonment by not more than one year or by a fine of not more than five hundred dollars, or by both such fine and imprisonment.

American Control of the Cotton Supply.

The address of Chairman J. K. Bythell at the annual meeting of the Manchester Ship Canal Co. last month contained the following statement regarding the world's cotton supply:

It is really amazing that America should have increased her production of cotton in 35 years from about 4,000,000 bales to the 14,000,000 bales which last season's crop almost reached. The question of what America can do in the future is very important not only for this district but for the whole world. Can America continue to increase her production to such an extent as to keep going the constantly increasing number of spindles throughout the world? India and Egypt are growing larger quantities of cotton, but experience has shown that their capacity for increased production is relatively small as compared with America. The British Cotton Growing Association is doing excellent work, especially in Africa, and it is no disparagement of their efforts to state that it does not seem likely that within a few years' time Africa will be able to produce, say, 1,000,000 bales.

If the spindles of the world require, as they will require, an increase of millions of bales during the next ten years, it appears to me that it is to America, and practically only to America, that we can look.

The managers of transportation companies, like the Manchester Ship Canal, are laboring under no illusions in regard to the way in which to increase the supply of cotton. Their income is not derived from public contributions or government subsidies to associations engaged in experimental work of growing cotton where cotton has never been grown in commercial quantities. It is derived from the freight and the transportation charges on cotton in shipload lots. When it comes down to a question of practical affairs only one conclusion is possible. The way to increase the world's cotton supply is to develop the cotton growing resources of the American cotton belt.

The value of imports of cotton manufactures into the United States amounted in 1908 to $62,010,286, more than one-half of which consisted of laces and embroideries.

The total value of exports of cotton goods from the United States for 1909 amounted to $31,878,566, compared with $25,177,758 in 1908 and $32,305,412 in 1907.

"Booing" in the Cotton Trade.

Under strong provocation a considerable number of the traders on the Manchester Royal Exchange on March 11 gave what appears to be an exhibition of rather bad manners by pushing James A. Patten from the floor into the street with a chorus of what is known in England as "booing." The cause of their displeasure was the fact that Mr. Patten had bought cotton for a rise and made money by the venture, while the Manchester traders had traded on the short side of the cotton market and lost money by the operation. In the last analysis that is the pith of the controversy. The Manchester incident should not be signaled out as an indication of ill-breeding on the part of Lancashiremen. They treated Mr. Patten just as the members of the New York Stock or Cotton Exchange would in all human probability treat one of the leaders of the present movement to reform those exchanges if he should elbow his way onto the floor of either of them, after reform measures had been adopted. Human nature is much the same the world over and crowds, whether in the street or on the floors of exchanges, are not disposed to indulge in fine discriminations. Moreover there is the almost irresistible temptation for a man in a crowd to give a shove to help the general movement along, regardless of whether he is personally interested in the dispute or not. Mr. Patten may have shown a high degree of courage and skill in his cotton gambling operations on the New York Cotton Exchange, but he showed a great lack of discretion when he stalked onto the floor of the Manchester Royal Exchange, and a lamentable ignorance of human nature when he shook his fist at the crowd in Manchester, and called them names after reaching New York.

The Manchester Guardian comments very fairly on the incident in the following editorial:

> There was an undignified scene on the Manchester Exchange yesterday afternoon when Mr. Patten, who is notorious for his successful speculations in wheat and cotton, was hustled out of the building with the accompaniment of a great deal of hooting and some sympathetic cheers. Mr. Patten's first appearance on the balcony provoked hardly more than a mild curiosity, but perhaps he was rather rash in deciding to walk through the crowd. Of course we must respect moral indignation, and certainly there was some infusion of this in yesterday's proceedings. Mr. Patten belongs to a class which we may sometimes admire, though it can hardly be respected, and just now Lancashire professes a particular grudge against him for having raised and maintained the price of cotton to the detriment of trade and to the distress of the operatives. If for his own benefit he has consciously done this, we need not split straws over correct manners toward such-like men, especially when, by coming among us, they seem almost to invite an expression of opinion. It is not at all clear, however, that if Mr. Patten and his fellow-speculators had been out of the way the price of cotton would have been any lower than it is, and doubtless he is supported by the familiar argument of economists that speculation in futures tends to even prices. The truth is that there are very many Lancashire spinners who are tarred by the brush that has blackened Mr. Patten, and probably some of those who hooted him yesterday were vexed because their particular speculations had not coincided with his.

Spun Silk Yarns Advanced.

One of the features of the textile markets has been the strong demand for spun silk yarns. The large manufacturers find their facilities taxed and an advance in price has been expected for some time. It was therefore no surprise to the trade when Cheney Brothers' list was advanced 10 cents per pound the first of the month, with other large manufacturers making a similar increase. This makes the price for 50/2s, $3.20; 40/2s, $3.10 and 30/2s, $2.95 and other prices corresponding.

The prices in the Silk Market report printed in an earlier form of this issue should therefore be 10 cents per pound more than listed.

The imports into the United States in 1909 amounted to $62,010,286, more than one-half of which consisted of laces and embroideries.

An aggregate quantity of textile materials produced in the United States in 1908, is 6,823,599,121 pounds; the quantity imported, 819,611,607 pounds; and the quantity exported, 3,840,147,569 pounds.

Weights and Measures for Textiles and Fruits.

THE RIGHT WAY.

Since the defeat of the metric bill in the House of Commons, due in great measure to the determined opposition of the Lancashire cotton trade, there has been a quiet but none the less efficient effort among British cotton spinners and manufacturers to improve the British standards so as to meet the objections which the metricites have exaggerated into reasons for introducing their system of weights and measures. An important step was recently taken by the British Weights and Measures Association in formulating the following proposals, which were submitted to a vote of the members of the Federation of Master Cotton Spinners, and of the North and Northeast Lancashire Cotton Association:

1. That the use of tons, hundred weight and quarters should be dropped, and that in their place all weights of one pound and upwards should be expressed in terms of pounds only.
2. That pence and hundredths of a penny should be used in all quotations and charges pertaining to cotton yarn, cotton waste, and all kinds of goods in place of pence and the usual vulgar fractions.

On the first proposal 97 per cent. of the spinners and 79 per cent. of the weavers voted in favor of the change. On the second, 91 per cent. of the spinners and 72 per cent. of the weavers favored the change. Owing to this encouraging vote the proposals are to be submitted to cotton trade organizations throughout the kingdom, with the object of presenting a petition to Parliament for legislation placing the proposals on the statute book.

THE WRONG WAY.

The action of the practical business men of Lancashire illustrates the process of evolution by which our weights and measures have been developed and the only process by which they can be further improved. The contrary method of arbitrary and ill-considered interference with natural selection has recently had a striking illustration in the United States. A diversity in the size of containers for farm produce has brought about an intolerable state of affairs.

Take for illustration the case of fruit baskets. Some of the States, like Massachusetts, had established standards based on the dry quart; others had no standards at all. There being no United States law, berries, for example, could be legally shipped from North Carolina to Massachusetts in baskets smaller than the legal Massachusetts standard of 67.2 inches to the quart. Fruit in these small baskets, when offered for sale in Massachusetts, however, brought the dealers in conflict with the State law, their offence being punished by a fine. Massachusetts fruit and fruit shipped from other States having legal quart standards for fruit baskets thus came into competition with the fruit in smaller baskets, causing much confusion among dealers and housewives, who were forced to look out for the size of the basket as carefully as for the quality and price of the fruit in order to avoid being cheated.

A SINGLE STANDARD NECESSARY.

The obvious remedy for this evil is a United States single standard for fruit baskets, and a committee of three produce dealers, A. T. Cumings of Boston, P. M. Kiely of St. Louis, and John M. Low of Chicago, was recently appointed to further legislation that would meet the case. Upon applying to the authorities at Washington they were referred to the Bureau of Standards, whose officials framed a bill for them, which has recently been introduced in the Senate by Senator Lodge of Massachusetts.

The object of the promoters of this bill was highly commendable and in line with the action of the Lancashire cotton manufacturers, namely, to promote real uniformity of weights and measures. The bill framed by the Bureau of Standards, however, is designed to create diversity of measures and legalize petty fraud on the ultimate consumer, by reason of its containing this proviso:

Provided, that nothing in this act shall prevent the sale of such small fruits and berries by weight or by the liter, half-liter, quarter-liter, or multiples of the liter.

CONCEALING A DOUBLE STANDARD.

The legal quart basket now the standard for fruit containers in Massachusetts and a number of other States, and which the produce dealers desire by this bill to make the single standard in the United States, contains 67.2 cubic inches. The liter basket which the Bureau of Standards bill would also legalize contains only 61.022 cubic inches, or about 10 per cent. less. Thus the United States would have two legal sizes for fruit containers, one 10 per cent. smaller than the other, under the Lodge bill, whose professed object is uniformity of measures. This grotesque provision results from the hold that the metric fad has obtained on the officials of the Bureau of Standards. We acquit the committee of produce dealers of any complicity in framing this provision. In common with practically the entire population of this country they did not know how many cubic inches a liter contained. The responsibility for this provision rests entirely on the Bureau of Standards.

CONSISTENT STATEMENTS.

In explaining the metric proviso to the committee of produce dealers the associate physicist of the Bureau frankly stated: "We would not care to frame a bill that would in any way interfere with the metric system." That admission goes well with the declaration a few years ago by the director of the Bureau that our English system of weights and measures "is not worth a damn." It is not practical uniformity of weights and measures that the officials of the Bureau want; it is first, last and all the time the introduction of the metric system. They are willing that confusion shall be legalized in the wholesale produce trade; that both confusion and petty fraud shall be legalized in the retail trade, as long as nothing interferes with the use of the metric system. The effect of such a measure as the Lodge bill is beyond question. For an indefinite period, confusion and fraud, with a slow but certain tendency for the smaller basket to displace the larger. In this case the metric is the smaller. In some other branch of trade or industry the English unit would be the smaller. And thus under the policy involved in the Lodge-Bureau of Standards bill the weights and measures of this country, at present the most uniform of any country on earth, would in time be involved in permanent disorder.

THE UNIFORMITY OF CONFUSION.

Fortunately, however, the Constitution provides that "Congress shall have power to fix the standard of weights and measures." Fortunately Congress will have the history of weights and measures in other countries as a guide. Among those countries is France. About 1750 Voltaire, writing of customs and measures, said: "Weights and measures differ as much as customs, so that which is correct in the faubourg of Montmartre, is otherwise in the abbey of St. Denis. The Lord pity us!" One hundred and fifty-two years later, in 1902, after the French government had for a hundred and ten years sought uniformity by forcing the metric system on the people, Paul Lamoitier, a French textile manufacturer, wrote thus of French textile weights and measures: "We are as much in the anarchy of weights and measures as at the time of the Revolution. . . . We still have the ancient units of weights and measures, and we scarcely comprehend each other when we talk of spinning at Rheims, Roubaix, Elbeuf, Sedan or Vienne." These two statements, one hundred and fifty years apart, illustrate the permanence of established standards, and the fact that diversity is converted into uniformity by reducing and not by increasing the number of units in use.

OBSTACLES.

The confusion and fraud under present conditions make it the duty of Congress to provide a uniform standard for the sale, not only of fruit, but of many other products. But this result is to be brought about by establishing a single and not a double standard. The metric proviso in the Lodge bill makes it certain that this otherwise excellent and necessary measure cannot be-

come a law in its present form. The first principles of uniformity in weights and measures forbid it. The high cost of living, which Senator Lodge is investigating, is another and insurmountable obstacle to his proposition to reduce the size of the quart measure by 10 per cent. It is time that Congress put an end to the recent tendency to abdicate its functions involved in the practice of intrusting the framing of the laws to the executive departments.

THE CONTRACT SALE NOTE.

Editor Textile World Record:

Your article in the March number referring to the new sale note contract, so-called, is very interesting to a buyer for the reason that the principal point at issue is well covered from the seller's standpoint, but not touched upon from the buyer's.

The point I refer to is cancellation of contract if the mill shall fall behind in the delivery of installments. When the manufacturers first suggested this new sale note the clause simply stated:

"The failure of delivery of any one installment should not be considered sufficient grounds for cancellation by the buyer."

This point was so strongly objected to that afterwards they changed it by adding the words:

"Unless it amounted to a substantial breach of the contract."

But they have said nothing at all about the buyer's rights when the contract is very much overdue and no deliveries are being made.

During the great rise in cloth during 1906 and the early part of 1907, the experience of the buyers was that the vast majority of the mills were behind on their promised deliveries, in some cases the mills not making any deliveries on their contracts for three or four months past the time promised. In some cases where they began fairly promptly their weekly deliveries were much smaller than promised. The consequence was that when the crash came in the fall of 1907 the buyers had contracts outstanding which should have been completed by the mills, and in addition to this they had finished goods on hand that had been carried over from the season before through inability to get their goods from the mills when promised.

About 90 per cent. of the rejections after the panic were based by the buyers on the fact that the mills were behind on delivery, and is it any wonder that they took advantage of their rights? Whatever damage may have been done by buyers to the mills by these cancellations, amounting to nothing as compared to the damage done by the mills to the buyers through non-delivery of their contracts as placed, and until this point is well and definitely settled the buyers will not be satisfied to adopt the sale note gotten up by the manufacturers' associations.

There may be other objections from the buyer's standpoint to this sale note, but if the buyer is going to be asked to waive a right which he now has, why should not the seller be asked to assume a right to which the buyer is entitled, and that is, in case of non-delivery of the contract as placed, the seller shall be obliged to tender other goods of equal quality of manufacture to the buyer to replace those which he should have made himself?

It would look to the buyer as if the mills, who caused cancellation by their non-deliveries, were now asking for protection from their own faults, and this does not seem just.

Buyer.

We are informed that James Hope, 18 Quai de la Bourse, Rouen, France, expects to attend the Textile Machinery Exhibition at Boston this month with the object of explaining the automatic accelerator or two-speed driving attachment for ring spinning and twisting frames, for which he is sole agent. This accelerator is in successful use in a large number of European mills and it is intended to introduce it in the United States.

Between 1880 and 1909 the exports of cotton to the United Kingdom increased about 50 per cent., those to Germany nearly 700 per cent., while those to France more than trebled.

A Philadelphia Wool Dealer's Trip to South America.

BY PATAGONIA.

(Continued from March.)

Half way down the mountain the man stopped the car and informed me we were at the half-way house and before I knew it he was drinking wine at my expense. After a short wait we proceeded on our way, past men, women and children and houses at a good clip, and we at last arrived at the foot of the mountain at the railroad station.

There is an utter absence of hurry among the people, who move slowly about the streets and, like most Latins, the women affect the bright colors and are very picturesque. On my return to the ship I found the decks had been turned into sort of a dry goods store, the natives having spread their wares all over the place. Prices were high until just before the bell rang for all strangers ashore, when they were cut in half in the anxiety to get some of the English money.

HAULING WOOL FROM THE BARRACCO TO THE LIGHTER MONTENDER.

The last box and wicker chair had gone over the side and all was ready to proceed when it was discovered that all the passengers had not returned to the ship. Then came the stern and impatient tooting of the ship's whistle for about twenty minutes and as this produced no results the ship slowly got under way and soon the island was a blur in the distance.

The last land or rocks to be seen for five days was in sight by noon of the next day. This island, St. Vincents, is the largest of the Cape Verde group, and has no vegetation. It is a coaling station for homeward bound ships. The island rises sharply out of the sea and its rocky walls must have caused the death of many a ship before the lights were placed on it. It is not difficult to believe that this, as well as Madeira and Teneriffe, were the mountain peaks of the lost continent.

As we neared the equator the weather grew warm and sticky. Small flying fish are seen in large numbers, the wash from the ship's bow scaring them from the water in hasty flight. The line of the equator was crossed without bumping and Neptune must have been busy elsewhere as he failed to call. Contrary to expectations the weather was much cooler here than it had been for sev-

eral days, as we had gone in the path of the northeast trade winds. This was most enjoyable after the sticky weather encountered while we were in the "doldrums."

The next days were spent with games and sports on the ship's deck. Cock fighting and spar boxing were the most interesting and afforded a lot of amusement. The cock fight consisted of placing the two contestants within a circle drawn on the deck. Each had the knees drawn up and the hands tied over the knees, a small wooden stick was thrust under the knees and over the bend of the elbow, thus leaving free for action the feet only. The game was to push one's opponent from the ring with the feet. When the battle opened it was usually short as the first one to be upset was helpless and easily disposed of. Spar boxing consisted of placing two opponents astride a spar raised about four feet from the deck. Then with a pillow each would batter the other until one was knocked from his perch.

About 5.30 on the morning of the eighth day I poked my head out the porthole and immediately a lighthouse tipped me a wink and I then knew that the South American continent had been reached. Half an hour later with a rattle of chains the ship came to anchor about a quarter of a mile from the breakwater that guards the light shipping in the port of Pernambuco, Brazil. Soon the custom house boat appeared in the distance followed by smaller shore boats strung out in a long line. After the officers boarded the ship the boat drew off and the tender with passengers came along side. As the sea was running high, the gangway could not be lowered, so a large cylinder shaped wicker basket with a capacity for six or seven people was brought forth and was attached to the steam crane aboard ship. This was speedily filled with people, the windlass started and the basket swung through the air and safely landed on deck. All the embarking and disembarking was accomplished in this way.

As a grim reminder of what might happen if one were to get into the water, the fins of several sharks could be seen about the ship. These were feeding on the ship's refuse. After three hours discharging cargo the ship got under way for a 400-mile run to Bahia. Shore was kept in sight all the afternoon and at night the few lights on the Brazilian coast could be seen. We passed several natives at sea in their catamarang boats, which were so low in the water that it seemed as if their passengers must be a temptation to sharks.

Bahia was made at noon the next day and much disappointment was expressed at the short stay of an hour and a half to be made. Thirty-six hours brought us in sight of Cape Frio, a headland about sixty miles from Rio. Along this shore, which is lined with a low mountain range rising almost sharply from the water, we proceeded for forty miles. As we approached, Sugar Loaf mountain could be made out, guarding the entrance to the harbor. To all appearances there was but an unbroken wall of mountains and one could scarcely believe that within the solid wall lay one of the largest cities of the Southern Hemisphere. Passing between two large rocks, so close that we went through the back wash of the breakers, we steamed past Sugar Loaf, and the most beautiful harbor in the world was before us. Surrounded by its walls of mountains and low hills with the many islands of all sizes, the resemblance is that of a very large lake in the mountains, the difference being that this harbor is sufficiently large to permit the manoeuvering of all the war fleets of the world among the islands with small chance of finding any who were disposed to refuse battle.

Some years ago this place was one of the plague spots of the world, and it is told that one hundred ships were at anchor in the harbor with their crews all dead from yellow fever. Improvement in drainage, water supply and docks have worked wonders until there is now only an occasional case, which gets no advertising. A railroad connects this port with Rio and passes through the small but very wealthy city of San Paulo, which is located in the mountains at an elevation of about 3,000 feet above the sea

level. This railroad is said to be the best paying road in the world. It has a practical monopoly of the coffee traffic as it brings in all that comes into Santos, and runs through the rich district of San Paulo. The government gets 10 per cent. of their net earnings and handsome dividends go to the English stockholders. Too late, we learned that this was the last port of cheap tobacco and cigars, and we approached the forty-eight hours' run to Montevideo with short supplies. The duties on cigars and tobacco in both Uruguay and the Argentine are such as to make the smoking of Havana cigars a luxury, and a cigar of this quality if very hard to get under 40 to 50 cents, and more often 80 to 90 cents.

A wait of two hours at Montevideo and we were again en route for Buenos Ayres up the muddy waters of the Rio de la Plato. The river at this point is sixty to seventy miles across and as far as we could see there was no land. It is very shallow all the way up to Buenos Ayres, 120 miles, and at times it seemed as though the ship dragged on the muddy bottom. A curious thing about this river is that when the wind blows strongly from the north the water goes out so that navigation for the largest steamers is difficult and dangerous. It has happened many times that the big boats have been obliged to remain in dock several days after advertised sailing until the wind gets far enough into the south to blow the water into the river. After dinner, about 8 P. M., a glare of light could be seen directly ahead, the sheen from lights of Buenos Ayres.

Spanish is the language of the country and eight out of every ten people speak it.

MARCADO CENTRAL. BUENOS AYRES WOOL MARKET.

While one may get along without knowing much of it, it is a good thing to have some knowledge of it. Most of the hotels have clerks or a porter who speaks enough English to set one going in the right direction, and many of the large stores are similarly equipped. The money of the country is a little confusing at first, but after one inquires into the matter it is very simple. Argentine is practically on a gold basis, while the circulating medium is largely paper, or as it is called "moneda national." Each paper peso is backed by the government by 44 cents of Argentine gold. The Argentine gold dollar is worth .965 United States gold, so it is easy to figure that an Argentine paper dollar is equal to .4246 United States gold at par.

House rents are high; $800 gold per annum is not unusual for a small flat in the city. Hotel rates vary from $10 to $17 per day, or in United States money $4 to $10. The Continental style prevails as to meals. Rolls and coffee for early breakfast, breakfast at noon, tea at four o'clock and dinner at 7.30 to 8.30. The down town part of the city is laid out in squares, so it is easy to get about after one gets the lay of the land. Some of the streets and sidewalks are very narrow and one is constantly being forced into the street to avoid passers. During the rush hours some of the narrow streets are closed to vehicles, as the pedestrians are so numerous. In places, the electric cars run so close to the sidewalks that it is necessary to constantly be on the watch to avoid being struck.

The Avinida de Mayo is the principal street of the downtown district. It is very wide and paved with asphalt. There are many fine buildings on either side. Facing one end of the street is Congress Hall, and the other opens into the beautiful Plaza de Mayo, which in its turn is surrounded by many beautiful buildings, among which are the Cathedral, the Casa Colorado or Rose House, a government building similar to the White House, and a number of banking houses. The people take great pride in the numerous plazas scattered throughout the city and which are laid out with tropical plants and trees. Like all the South American countries the Argentine supports a lottery, and the sale of tickets is a business for many of the citizens. Peddlers of these tickets from the down and out class are numerous and most persistent salesmen. Saying "No" once has no effect. Sometimes the peddler will hang on for two or three blocks, begging one to buy and forcing the ticket into one's hand or pocket. To throw the ticket into the street is the best way to get rid of the pests.

The Mercado Central de Frutic is the most important center of wool buying. This is located near the docks, so is easily accessible to rail and water transportation. The building is of brick and covers a large area. Herein is handled or sold to foreign buyers all the wool and hides consigned to the different consignees. There are three floors to this building. The second and third floors are devoted most exclusively to wool. About 40,000,000 pounds of wool can be opened and displayed in piles at one time, a fact that gives some idea of the size of the floors. About 25,000,000 pounds constitute the permanent daily stock during the season, and about 2,000,000 pounds are received, sold and delivered daily. Almost 400,000,000 pounds of wool pass through this market during the season, which opens about the last of October and extends over a period of five months. Buyers from all parts of the world are here. French, Belgian, German and English rub elbows, and although much South American wool goes into the United States, there are very few United States buyers on the ground. American manufacturers and dealers seemingly prefer the practice of buying through the foreign wool houses wool put up specially for the States. In this respect we buy wools that are put up to be attractive rather than buying them on their merits.

The consignatarios rent floor space in the market and as the wools come in they are opened and roughly graded for the inspection of the buyers. Each selling concern has its representative near the wool to quote prices and receive offers. They are never in a hurry to close a trade until the last possible buyer has had a chance to figure. Prices are quoted in dollars per 10 kilos. Any dispute between buyer and seller as to the condition of the wool delivered is settled by arbitration by two or three disinterested experts. Should these be unable to agree there is a board of judges before whom the matter can be brought, but it is very seldom that this occurs, as the case rarely gets beyond the first arbitrators.

Besides the Buenos Ayres and Entre Rios wools that enter here, there are wools from Patagonia and a few from Puntas Arena. The best of the low crossbred wools in the province of Buenos Ayres comes from the south of Buenos Ayres and from the north

of Bahia Blanca. Seventy-five per cent. of the Argentine wools are raised in the province of Buenos Ayres and largely marketed through the Mercado Central, although Bahia Blanca is a large wool market, but as a rule the wools that come in there are of a poorer quality. This port is also the outlet for the Patagonian wools which are very similar in quality and condition to our domestic territory wools. In looking over a line of these wools one is struck by the resemblance to Colorado, New Mexico, Utah and Wyoming wools.

The one objectionable thing to the South American wools is the mestiza burr. Buyers of wool for the States always try to select the brightest wool and those free from burr. Wools that are to be shipped to the States are prepared first by grading into the different qualities. The fleeces are then opened and the skirts and other bad parts removed. The best part of the fleece is then passed along and several portions of different fleeces are rolled into a bundle and tied. In some instances the tiers of the fleeces select the very brightest and lightest parts for the outside wrapper, and put the poorer and dark colored parts inside the bundle. This shows how some of the exporters can dispose of their poorer fleeces to better advantage, thus making capital out of the States' weakness for wools that appear bright and in good condition on the surface. The province of Buenos Ayres produces mostly wools of a low crossbred order, 46s to 36s. Finer crossbreds, 50s to 56s, come from the province of Entre Rios and Corrientes. Most of the sheep in Entre Rios have been bred up from common or carpet wool sheep. This can be easily determined by an examination of the skirts of the fleeces, which still show this grade. For this reason Entre Rios wools are, or should be, more heavily skirted when preparing them for the American market. The Argentine government places a small export duty on wools, this being one of the fixed charges. Thirty cents gold per 1,000 kilos (2,200 pounds) is the usual rate. The freight rates to the States are about $2 per forty cubic feet.

One could easily become lost among the wool piles in this market and wander about all day seeing the same piles at different angles. The piles are of all shapes and sizes. The market opens at 8 o'clock and from this until 11 o'clock the trading is done. At 11 o'clock a bell rings which signifies that trading is over for the day. Afternoons are given to receiving and delivering. Cars run to the lower floor of the building and unloaded, the wool being lifted to the top floor by cranes. In making the deliveries the fleeces are tied in sacks, loosely packed and dropped on a shute under which the receiver's team waits. All the charges for classing, baling, teaming, stamps, broker's commission, etc., must be borne by the buyer, and it might properly be asserted that some of the brokers take advantage of any turn in the market to extract a profit in addition to their regular commission. It is easily within the range of a possibility that orders for good wools are in some cases executed and filled with poorer wools than represented. It is a temptation to do this when there is cash and orders on hand and wools are generally poor. If buyers do not buy, how can they make money? This may be good for the buyer, but rather tough on the man who pays the freight.

Owing to the extreme dry weather that prevailed in Argentine during the fall and winter months, there were very heavy losses of sheep. Some of the districts reported losses as high as 25 per cent. There was no portion of the country free from the drought and it is estimated the loss for the entire country was 20 per cent., equal to 80,000 bales, or 80,000,000 pounds. The same causes were responsible for the poor condition of the wools generally. They were of a poor color, tender and unusually burry. Men who have worked on this class of wool for years claim that this season's clip was the poorest known for twenty years. Such conditions made selections for the States most difficult, as bright lots were scarce, and where an occasional lot appeared there were twenty buyers for it, which did not tend to lower prices. These good lots were used to tone up the poorer classes. The market through this season was sustained largely by

the operations of American and German buyers. Germany seemed particularly anxious for wool and were steady buyers. France operated cautiously and England was conservative. After the season opened good wools advanced rapidly while the poorer wools declined and were draggy throughout the sales. No one seemed to care for the Patagonian wools. The 46s opened on a clean delivered basis of 51 to 52 cents and rose to 55 or 56 cents, and at these figures most of the business was transacted. There were not many 50s in these wools, but what there were went for 58 to 60 cents. The 56s and 58s from Entre Rios went at 60 to 62 cents. Low crossbreds from Lincoln wools were in good demand for the men who operated for the American Woolen Company.

It was stated by some of the foreign houses that buy for the States that the wools this season required so much manipulation to get them into shape for their customers that there was no profit in the business. Some claimed heavy losses. Large lines of the wools were bought in the country, but did not prove exactly satisfactory. The season was an unsatisfactory one, both as regards the condition of the wool and profits.

Montevideo being but one hundred and twenty miles from Buenos Ayres, the enterprising wool buyer can operate in both markets. The system here is entirely different. Wools are consigned to the numerous consignatorios and are offered for sale by each concern in its own barracca. The wools are sold in the original bags and the buyer gets just a peep at them from the few holes he may cut in the bag. The bulk of the Montevideo wools are merino, there being, of course, a smaller percentage of crossbreds. They are generally much lighter and of a better quality than the Buenos Ayres wools. All the Uruguayan wools come through this port and about 100,000 bales pass out annually. The buyers start on their rounds early in the morning. Each concern keeps a coach for the use of the buyer and these are kept on the run all day. When the market is active it is no uncommon sight to see ten or twelve coaches lined up before the different barraccas, the buyers waiting their turn, so it is necessary to know what one wants and to trade before leaving. There has been some effort by the smaller buyers to induce the sellers to open their wools and sell in piles, but the large operators will not make the necessary stand as they seem to believe it is to their advantage to buy the pig in a poke and thus handicap the smaller operator who cannot afford to take the chances.

Prices are quoted in Uruguayan dollar per 10 kilos. The government has placed export duties on wools and this puts on at least one cent per pound over and above the customary charges for buying, baling, classing and stamps. One peculiar custom is that the concern from whom the wools are bought is paid 1 per cent. for his commission and collects another 1 per cent. from the sheep man.

The Barraccas in which the wool is stored and sold have plenty of head room. The tiers of bags are piled eighteen to twenty high. To do this some use the fall and tackle, while many employ the primitive method of having four peons carry each bag on their shoulders up an inclined board, mounted on wooden horses and deposit the wool in its proper place.

There are two methods of classing wool for the States here. One might be called first class handling, when each fleece is opened and all the bad parts removed and then retied; the other, a second class handling, when the hand is thrust inside the fleece and the bad parts that can be located by feeling removed. The first is naturally a slower process and consequently costs more for labor, but gives the most satisfactory results. Prices are usually quoted for each style of handling.

Uruguay also had a drought, but not to the extent which prevailed in Buenos Ayres. It was partial and the shortage in the clip is estimated at 10 per cent., or about 10,000,000 pounds. The wool was not as good as in former years, although much better than the wool from Buenos Ayres. As a result the shipments from Montevideo were larger this season than for a number of years. Super crossbreds were in good demand from the States. As in Buenos Ayres, the Germans

and Americans were the most active and paid the best prices. Super merinos, 64 to 64s, moved towards the States on a clean delivered basis of 70 to 73 cents; 58s crossbred at 62 to 64 cents; 56s at 63 to 64 cents; 50 to 54s at 60 cents; 46 to 44s at 55 cents and 40 to 44s at 50 cents. French buyers held off until late before starting operations. It seemed strange to see wool for the States advancing in price and the poorer wools at a standstill, awaiting the pleasure of the foreign buyers.

From the province of Salto comes wool of a blue cast, which, while dark and heavy looking, are lighter than some of the brighter wools. The peculiar feature about these is that the fleeces are packed in the bags without being tied. In this respect they are similar to the New Mexican wools.

The time is almost here when Buenos Ayres and Montevideo will supply the States with a larger portion of wool. This will come in the not distant future when our people awake to the fact that the wool supply of this country is steadily decreasing. With our 11 cent duty on wool of the first class this is taking from the many and putting into the pockets of a few.

Montevideo is a clean city with well paved streets, electric cars and many fine buildings of the Spanish style of architecture. The climate is mild and as the city is located on the coast it is seldom uncomfortably warm on summer nights. From this port we leave for the States direct, calling at all the ports stopped at on our way out and over the same course up to Pernambuco, where the course is pointed northwest to Barbadoes and thence to New York.

Twenty-seven days on the ship from Buenos Ayres to New York made the Highland Light look like the Star of Bethlehem to one man at least.

The number of spindles in Russia increased from 7,500,000 in 1900 to 8,076,000 in 1909, or 8 per cent., and the quantity of cotton consumed from 1,350,000 bales to 1,514,000 bales, or 12 per cent.

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The annual meeting of this association will be held in Mechanics Bldg., Huntington Ave., Boston, on April 27 and 28. Following is a list of the addresses and subjects on which papers are expected:

President's Address, Charles T. Plunkett.
Welcome to the Commonwealth of Massachusetts, His Excellency, Eben S. Draper, Governor.
Address, Richard C. MacLaurin, Sc. D., President Massachusetts Institute of Technology.
Aboriginal Cotton Fabrics.
Buying and Handling of Steam Coals.
Certain Aspects of the Export Trade.
Choice of Power for Textile Mills.
Committee on Standard Specifications.
Distribution of Light in Illuminated Textile Mills.
Electric Drive as a Manufacturing Proposition.
Federal Corporation Tax Law.
General Dyestuffs.
Production Increasing Methods.
Progress of the Diesel Engine.
Sizing and Finishing of Textiles.
Superheated Steam and Superheaters.
Recent Developments in Cotton Dyestuffs.

THE TEXTILE MACHINERY EXHIBITION.

The long list of exhibitors who have already contracted for space at the Textile Machinery Exhibition, which opens in Mechanics Bldg., Boston, on the 25th of April, insures a most attractive show. With a few exceptions, the exhibitors of last year have taken spaces again, showing that they felt well pleased with the results. So many other concerns not hitherto represented have taken space, that not only has the main floor been completely sold out, but much of the basement has also gone, and some of the gallery.

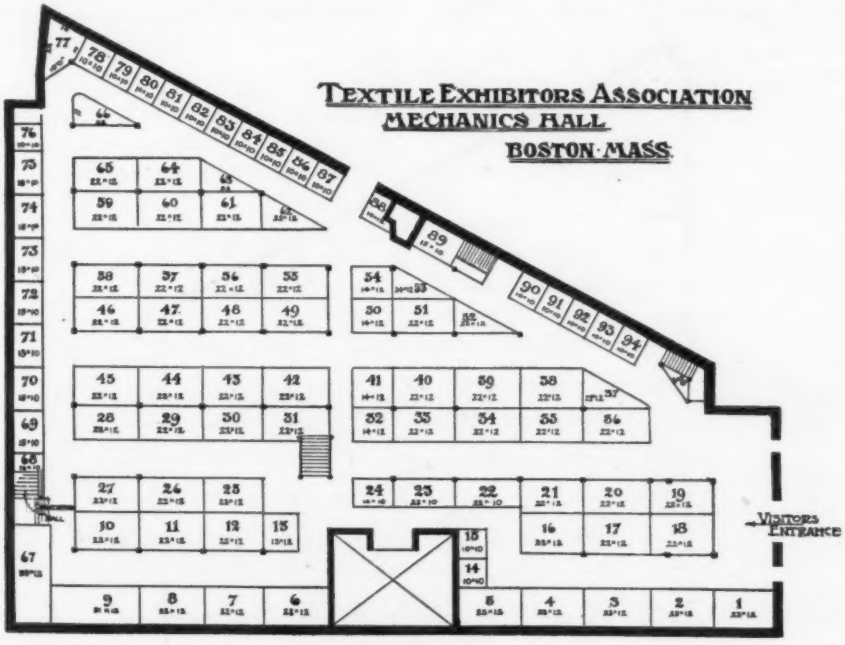
The following concerns had contracted for space on April 1st and the list was complete up to that date. By reference to the chart, the location of every space may be ascertained. There are a number of other concerns negotiating, and there is every prospect that at the time the show opens the list will be considerably enlarged.

One interesting feature is the number of exhibitors in the line of structural material and equipment. These concerns will be grouped in the basement.

With the experience gained last year, the

management has every assurance that a very complete exhibition will be held which will attract manufacturers and mill men from all parts of the country.

The meetings of the National Cotton Manufacturers' Association will be held in the hall on the second floor, and an attractive program has been arranged.

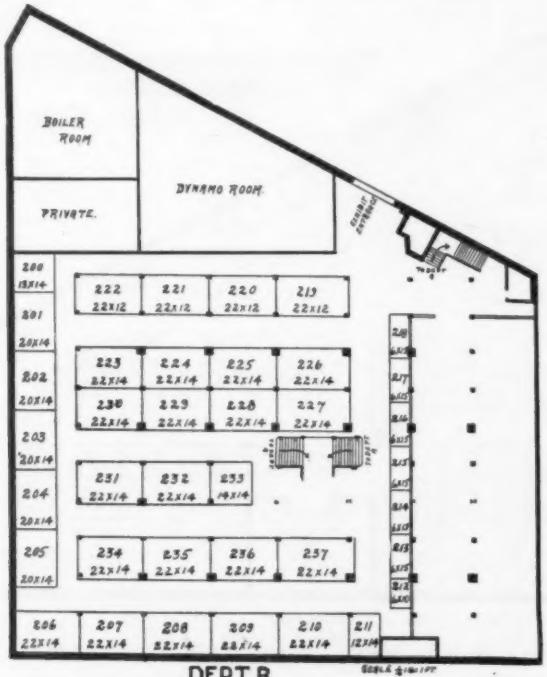


DEPT. A.
MAIN FLOOR

LIST OF EXHIBITORS SHOWING SPACES OCCUPIED.

American Moistening Co.....4, 5, 14, 15
American Warp Drawing Co.....22, 23, 24
Allis-Chalmers Co.....32, 33A, 40A, 41
Amer. Steam Gauge & Valve Mfg. Co., 72A
American Cotton Teazer Gin Co.....84
American Textile Appliance Co.....86, 87
American Finishing Machinery Co.....90
Atlas Portland Cement Co.....202
Arlington Machine Works.....59
American Mason Safety Tread Co.....215
Adams, J. Q., & Co.....212
American No-Slip Cement Co.....74B
Barber-Colman Co.....12, 13, 25
Bowser, S. F., & Co.....27
Borne, Scrymser & Co.....66
Butterworth, H. W., & Sons Co.....69
Barnes, L. E.....73
Bragdon, J. H., & Co.....Balcony 331, 332
Bogart Gas Power & Engineering Co..223A
Cooper Hewitt Electric Co.....2
Carrier Air Conditioning Co.....21
Crocker-Wheeler Co.....18
Coldwell-Giddard Co.....34
Crompton & Knowles Loom Works..44, 45
Chicago Rawhide Mfg. Co.....35
Cell Drier Machine Co.....49
Cramer, Stuart W.....56
Carbolineum Wood Preserving Co.....80A
Cling-Surface Co.....81
Cotton Publishing Co.....93
Concrete Publishing Co.....213
Concrete Bureau.....203A
Craig, The David Co.....218
Corrugated Bar Co.....234
Dodge Mfg. Co.....28
Dow Surgical Battery Co.....62
Draper Company.....30, 31, 32, 42, 43

Enterprise Rubber Co.....55
Emerson No Slip Cement Co.....74B
Firth, Wm., Co.....1
Fiber & Fabric.....3B
Fries, John W.....11
General Vehicle Co.....19
Gantt Piling Machine Co.....74A
Penn. Metal Ceiling Roofing.....226
Penn Cement Co.....231
Root, C. J., & Co.....95
R. I. Humidifier & Ventilator Co.....79
Sargent's Sons Corp., C. G.....57
Stafford Co.....7, 8, 9
Sellers, Wm., & Co.....20



DEPT. B.
BASEMENT

Heine Safety Boiler Co.....52
Holophane Co.....75
Hussa, Theo. F.....89
Hydraulic Oil Storage Co.....92
Harriman Engine Co.....204, 205
International Correspondence Schools...3A
Jenkins Bros.....—
Keystone Lubricating Co.....88A
Lord & Nagle Company.....6
Leyland Co., Thomas.....47
Lane, W. T., & Bro.....54
Link Belt Co.....82
Macrodi Fiber Co.....50
Mossberg Wrench Co.....64
National Brake & Clutch Co.....94
New England Cement Stone Co.....228
Parks Co., G. M.....26
Potter & Johnston Co.....51
Sub-Target Gun Co.....46, 47
Sanitary Cement Co.....202A
Structural Cement Stone Co.....233
Textile World Record.....6
Textile American.....70
Universal Winding Co.....36, 37
U. S. Column Co.....222A
U. S. Truck Co.....48A
Woonsocket Machine & Press Co....16, 17
West Disinfecting Co.....85A
Wert, C. S.....214
Warren Bros. Co.....232A
Wadsworth Howland Co.....232B
Trussed Concrete Steel Co.....224, 229

The wool clip of Victoria, Australia, for the 1908-09 season amounted to 68,930,200 pounds, a decrease, as compared with the 1907-08 season, of 10,189,772 pounds.

Sheep in Great Britain.

In the West Riding of Yorkshire, the great and ancient seat of English wool manufacture, there are now kept 730,000 sheep, producing four and one-quarter million pounds of wool, or more sheep and wool than we have in all New England. If our British kinsmen can do these things, why cannot we?

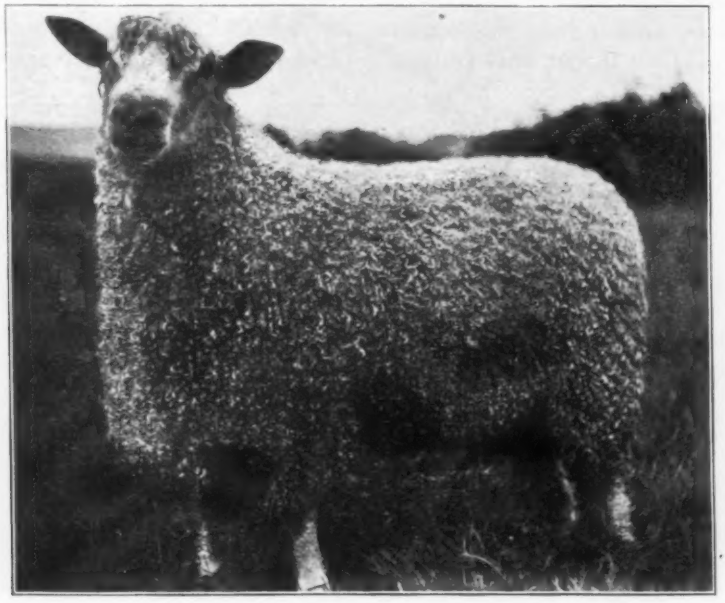
The foregoing quotation is a passage from William M. Wood's trumpet-call to the U. S. Department of Agriculture. The note admits of no direct answer from this country (Great Britain). Only the American agricultural expert can say why or whether successful sheep-farming can or cannot be carried on commercially in New England. One can only essay the humbler task of telling how we farm in England and of sketching broadly the part played in British agricultural economy by that indispensable creature, the sheep.

HAMPSHIRE DOWNS AT PASTURE. A SHORT-WOOLED TYPE WHOSE FLEECES ARE USED IN THE HOSIERY TRADE.

A beginning may be made with a slight correction of Mr. Wood's figures. A fall of 14,000 West Riding sheep is recorded between June, 1908, and June, 1909, and subject to probable subsequent decrease, the total is 716,000. It will be pertinent to deal later with the causes of a decline which still leaves the West Riding credited with 50 per cent. more sheep than all the six States of New England. Again one must guard against a misapprehension that might readily be formed. Truly the West Riding of Yorkshire is the "great seat of English wool manufacture." It is the seat of many other industries, notably the mineral industries. But, as distances are counted in England, the West Riding is a large stretch in which there is room and to spare both for mills and works and sheep. Its acreage exceeds 1 3/4 millions, making it the largest of English counties, and its population of nearly three millions causes it to rank next in that respect to the counties of Lancashire and London. Manufactures occupy a middle belt. Farming spreads north and south away over the limestone fells to the Westmoreland border and down over the fat lands bordering Nottingham and Lincolnshire. These reminders are necessary to a correct perspective.

"Then you don't really have sheep near your mills?" asks the inquirer, anxious to get to the bottom of this wool-supply mystery. The farmer rejoins that he has far too many sheep near enough to the town's belching chimneys to take injury from soot. The

winter of 1908-9 was foggy and for miles around the manufacturing cities the grass was brown or black with a film of condensed moisture and soot. Footmarks could be traced in it through the pastures and gradually diminishing in density, the smoke deposit settled down over the face of all Nature within a thirty-mile radius of Leeds. Rains washed the grass green later, but meantime something had happened to the animal in all the metaphors of enthusiasm. The sheep is the farmer's mainstay and sheet anchor, the keystone of his business, the pivot on which all farming operations turn. Although they sound like rhapsody the statements are simple truth. Besides giving the farmer the shortest means of converting labor into money, sheep bring otherwise uncultivable land into cultivation. They pay a double return—once in wool and once in



A SHEARLING RAM. WENSLEYDALE BREED. BRED AT CARPERBY, YORKSHIRE.

breeding ewes. Of 108 ewes on the experimental farm of the Leeds University at Garforth, 37 aborted their young. Twenty ewes of the hardy Masham (Scotch blackfaced and Wensleydale) breed produced only four lambs. The lambs that were born and did live were under standard. Then wool merchants say the wool they get from sheep that have been long under the smoke pall is tender, poor and cotted, as well as dirty. Thus from two points of view there are serious objections to keeping sheep too near large industrial centers.

It is necessary to cross from local to general considerations and to take note of the central position occupied by the sheep in British farming. The experts speak of the mutton. They start and keep going the rotation of crops by which the farmer gets his living without ever exhausting the fertility of his land. Their profit is direct and indirect. One breed, if not another, will be found to thrive anywhere except on wet land. With all their virtues sheep are not amphibians and undrained soil does mischief to what the ancients called the "golden hoof."

A farmer finds himself tenant of a hill of which the surface consists of grass and stones with light soil between. He might use it for pasture and so get a return that would not cover the rent. He ploughs and manures it and sets a crop of roots. When these ripen he "folds" his hoggs (year-olds) upon them, erecting pens to confine them to

one area. The animals eat and their droppings are returned to mother earth and are well distributed there automatically without cartage or wastage or labor. The animals fatten and by the time the turnips are done the shearing is due and the shorn hoggs are ripe for the fat lamb market. The land is ready next for a crop of seeds which will sustain lambs and their milking mothers at the rate of five to eight to an acre from

FLEECE WASHING. THIS PRIMITIVE METHOD IS BEING REPLACED BY TANK WASHING IN THE BATHS USED FOR SHEEP DIPPING.

April to October. In Lincolnshire a man will pay $12.50 an acre for the privilege of feeding a flock on another man's seeds for these seven months. The third year rye grass is sown along with clover and this gives sweet, rich grazing as well as a clip of hay. Oats follow and next barley before the cycle ends and a new one begins again with turnips.

The outline is that of typical mixed farming and it will be seen how with three or four arable fields the farmer is always able to tide at least his breeding stock over the winter and how with sheep and system he is enabled to transmute grass into grain. The farmer may cater for the early lamb, fat lamb or blood-stock market, may keep "flying flocks" or speculate in fattening other men's lambs. To the manufacturer these points are immaterial. The fact that the sheep is the sun and center of the British farming system is the one to impress upon the American head.

Apart from the planetary motion they impart to the several portions of the farm, sheep in themselves constitute a distinct department. There is work to be done for the sheep all the year round. Comparatively we have mild winters. There is no regular shed-feeding and practically without intermission the sheep remain in the fields all winter. What with lambing, dipping, washing, clipping, feeding, doctoring and miscellaneously tending, there is work for the shepherd every day in the year. In these islands we have good shepherds who know their flocks as they know their fingers and those interested in the labor cost of farming may take it that the shepherd gets a pound ($5) a week. That is the wage in Yorkshire and in Lincolnshire for a competent man. In Scotland the money is less, but rent and fuel

are free and the man gets grazing given for a cow and a calf. In some parts payment is made partly in money, partly in bacon, but in effect works out to $200 to $250 a year.

One would have a difficulty in combining a reckoning of the direct and indirect profits arising from sheep or in arriving at what the actual direct profits are. Rents vary, breeds and yields vary and instead of a general statement concrete particulars had best be given. The University farm at Garforth tabulates its experience in ten years' dealings with Lincoln and North (Cheviot, Leicester or Wensleydale) ewes and one year's breeding from Mashams (Blackfaced and Wensleydale). The wools are known well in America and the results accrue from the use at successive times of Lincoln, Oxford, Hampshire, Shropshire, Suffolk, Wensleydale and Leicester rams. The table follows:

	Lincoln.	North.	Masham.
Average number ewes purchased per acre	56	56	20
Average number ewes sold at season's end	47	51	17
Average number ewes dead per annum	9	5	3
Average price paid for ewes p. a.	$11.84	$11.42	$13.75
Average price obtained for ewes sold p. a. (including wool)	14.18	11.05	10.59
Average price obtained for ewes sold p. a. (reckoned on full no. purchased)	11.14	10.02	9.00
Value of wool per head p. a.	1.57½	.93½	.59
Weight of wool per head p. a. pounds	10.1	6.3	7.8
Average amount sunk on each ewe p. a. (difference buying-in and selling-out)	.68	1.42	4.75
Average receipts per ewe from sales of lambs, hoggs and hogg wool	10.75	14.09	12.23
Average annual balance left per ewe for food, labor and all expenses	10.07	12.67	7.48

The figures are in no sense maxima or models and are not to be read as criteria of the utility of the separate breeds. They are simply facts diligently recorded from work done under far from ideal conditions upon a particular farm. The remainders show what sum per ewe was left to pay for all that was eaten by or done for the animals in question. Cost of rams, food, labor, rent and supervision would of course remove the net gain far from the regions of cent per cent. Contrary to suggestions made in some American papers, farmers—at any rate in England—do not find a return from sheep of 300 to 400 per cent. The direct return is so difficult to disentangle that some farmers reckon separate sheep accounts out to a loss, but this may be defective accounting. Palpably there are two direct incentives to sheep growing. One may farm for wool, and farmers did so in this country in the memorable times when wool fetched 50 cents a pound. Otherwise one may farm for mutton, and mutton is the dominant motive now. It is to get bigger and more forward animals that farmers are vitiating the famous North hogg fleece by using Oxford sires in place of Wensleydales and Border Leicesters. Another of the Garforth tables will illustrate the comparative importance of mutton and wool:

	Lincoln Ewes.		North Ewes.		Masham Ewes.	
Ram.	Carcass of Hogg Lbs.	Hogg Wool Lbs.	Carcass of Hogg Lbs.	Hogg Wool Lbs.	Carcass of Hogg Lbs.	Hogg Wool Lbs.
Lincoln	75.52	12.88	74.85	10.42	61.77	9.44
Shrapshire	67.2	10.	69.	8.1		
Hampshire	78.6	10.3	76.5	8.2		
Oxford	74.78	11.18	76.97	9.05	74.	9.
Suffolk	73.	9.	76.5	7.8		
Wensleydale	75.3	11.5	75.36	9.9		
Leicester	67.5	11.8	74.9	9.5		

There is no absolute constancy in prices and there are side issues to reckon with, but with fat hoggs fetching 17 cents for butcher's meat and their wool going at 20 to 28 cents, it will serve to reckon three of mutton as equivalent to two of wool. The farmer who sees his way to gain three at a loss merely of one has his inducement. There are considerations to hold him back, such as the purity of his stock, his reputation in the wool market and the fear that the new cross will be less hardy than the old. On the other hand he may be tempted forward by a chance of getting his young early to market and securing an out-of-season price. The points are of importance here simply as showing how farming is done and what the forces are that are shaping the course of wool growing.

No statement would be complete that failed to take note of the fall in the price of mutton, which accounts in large measure for the decrease already noted in the flocks of the West Riding. The sheep industry, the keystone of the agricultural arch, has been sorely threatened. Prices for lambs fell 20 per cent. in 1908 and again 30 per cent. in 1909, and wool by no means advanced in ratio. Affairs are mending and better fortune is expected now that the frozen meat importers have lost some millions and repent their flooding of this market with Argentine and New Zealand lamb. Is it necessary to dilate on what blows of this sort meant to British farmers? They saw themselves faced with ruin or with revolution, for it is more easy for a manufacturer to scrap every item of his machinery than for the farmer to forego all that he and the sheep have put into the land and to embark on a new sort of farming based on another rotation of crops.

Mr. Wood has appealed to the Government to come to the wool user's aid and amplify the sources of material. The fact excuses a reference to what is done by the authorities in England. We have a Department, 21 years old, known as the Board of Agriculture, and worked at a cost of $865,000 a year. Its domains include all farming and fishery and it is not concerned specifically with sheep more than with other animals or with crops. The chief of its functions are to prevent the introduction and spread of disease among animals, deal with insect and fungus blights, administer the laws regulating the purity of foodstuffs and fertilizers, collect statistics and disseminate useful information. It publishes leaflets and a monthly official journal. The Board is in authority over the County Councils in agricultural affairs and is thus in touch with their experimental proceedings. The Leeds farm, directed by Professor Seton of the University, is a County Council affair and a score or more of Universities and colleges have experimental stations. At these the farmer may acquire a complete scientific education or at any time learn what the scientists are doing or thinking.

Further, there are the organizations that farmers themselves maintain. Some 26 sheep breeders' and flock book societies exist in addition to the National Sheep Breeders' Association. Each looks after the interests of its own pedigree stock and bears the name of the breed with which it is associated. There are a hundred and odd district Chambers of Agriculture with a Central Chamber in London and in regular communication with the Government Board. There are two hundred or more district farmers' societies, many of them holders of agricultural shows. Then organizations like the Royal Agricultural Society of England, the Highland Society of Scotland and the Royal Dublin Society in Ireland do more than can be told to stimulate improvement in farming. An Agricultural Organization Society gives members of district associations the benefit of cheap cooperative insurance of live stock. There is a Central Land Association and various societies to register sheep marks. If the complexity begins to look alarming it may be recalled that sheep culture is not a modern innovation in England, but has been fairly continuous ever since the Romans were here.

Neither is the sheep industry a creation of the Government and it receives no protection of the fiscal sort. The Chambers and other bodies and the large land owners in the House of Lords are ever alert to ward off fresh burdens of taxation on sheep. No political program definitely includes duties either on mutton or on wool. Farmers talk unceasingly of forming an agricultural party in Parliament, but none exists in name. The laws are said to be unfavorable to farming, but rents, after falling 30 per cent. in 15 years, show a distinct tendency in the last four or five years to rise. Owners find no lack of tenants for farms that are in fair condition and that is a certificate of the general health of the trade.

Dogs are understood to be the pest of the American farm and damage by dogs is the theme of unending complaints in the surroundings of urban districts in England. Dogs and smoke operate to banish Yorkshire sheep to the remote uplands. The dog

population is kept down in England by the license fee of $1.87 yearly. Farmers of live stock obtain exemptions and it is significant that some sheep owners advocate the not used at all for sheep and cattle." Another farmer adds: "A great many useless curs are kept at farmhouses and in many cases are the dogs that do the mischief." Is

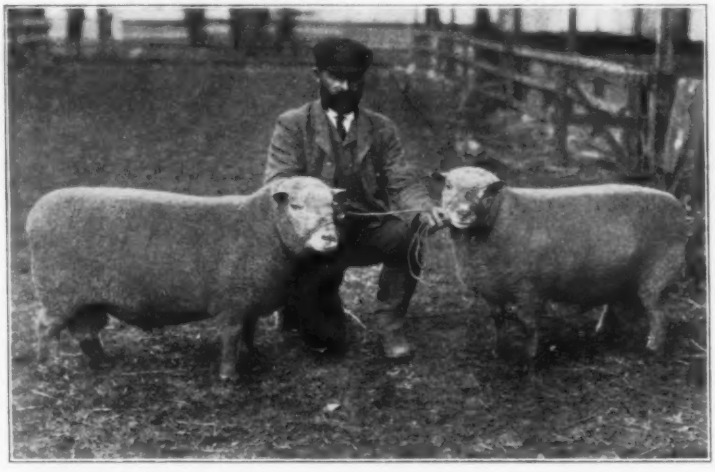
COMPARATIVE AREA AND NUMBER OF SHEEP IN NEW ENGLAND AND THE WEST RIDING DISTRICT IN ENGLAND.
[THE FIGURES FOR THE NUMBER OF SHEEP IN NEW ENGLAND ARE THE ESTIMATES OF THE DEPARTMENT OF AGRICULTURE.]

doubling of the tax and the abolition of all exceptions. To quote a farmer who should know: "Exemptions are used freely (i. e., by farmers themselves) in favor of dogs that are it amiss to ask whether all the farm dogs in New England are reduced to strict orders? Dogs have received their share of American blame, but has it been proved that they are

more than a minor worry and that dogs alone account for the extinction of 664,000 sheep in New England? In view of English experience there is room to doubt whether the

MOORLAND SHEEP, YORKSHIRE. TAKEN WITHIN EAR-SHOT OF THE FACTORY WHISTLES.

disappearance of the dog would supply the necessary incentive to farmers who might be breeders of sheep. Was it not Secretary Wilson of the U. S. Department of Agricul-



TWO-SHEAR SOUTHDOWN RAMS. BRED AT CAMBRIDGE, ENGLAND.

ture who said: "When the farmer can get 50 to 60 cents for his corn he is not going to wade through mud feeding hogs and cattle?"

It is out of no loving kindness for manufacturers that farmers maintain flocks of 27,618,400 sheep in Britain. Sheep suit him best and the farmer who replies honestly to the question why England is fed with Danish butter and Continental vegetables, fruits and eggs, gives the reason that the English farmer applies himself to work that pays him better. So far as the present is concerned the conclusion come to is this: The British farmer has imperative reasons for raising sheep. It is inferred on general grounds that the New Englander at all events has not the same reasons. It is suggested that there are deep reasons for the American decline just as there are for the practically steady maintenance of 27 to 33 million head of sheep in this country. And it is suggested further that the problem of increasing the American wool supply is one that involves examination of the whole theory and practice of New England farming. The sheep wants weaving into the fabric of farming.

A MODERN WORSTED MILL.

The Jules Desurmont Worsted Co., of Woonsocket, R. I., are beginning work on the second half of their yarn mill and expect to have the entire mill completed and running by the middle of the summer. The accompanying cut, Fig. 1, shows the mill as it will look when finished. The foundations for the entire mill were built some two years ago, only one-half of the superstructure being built at that time. The full equipment will include 16 mules manufactured by the Societe Alsacienne de Constructions Mechaniques and has a capacity of about 4,400 pounds of yarn per day in sizes to 40s.

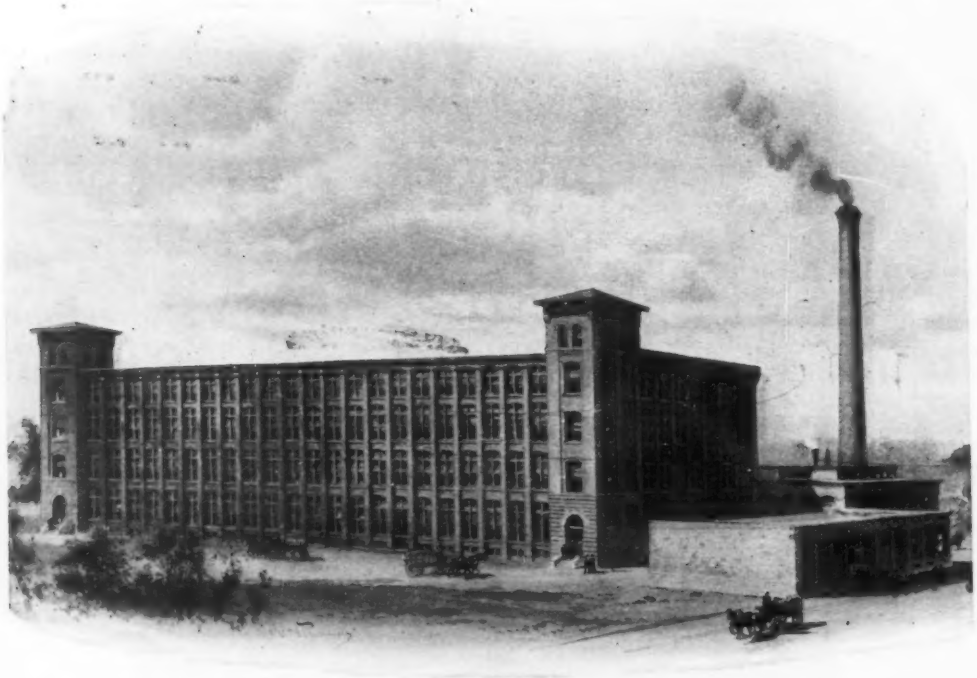


FIG. 1.

The mill was designed by F. W. Dean, mill engineer and architect, of Boston, Mass,. and contains. several features of modern mill engineering practice which are worthy of particular notice. The mill is located on the Blackstone River, near Woonsocket, R. I., and the ground in places is so soft as to require the use of piling.

The building itself is of standard slow burning mill construction throughout, all girders being of wood. It is 333 ft. long by 109 ft. wide, with four floors. The three upper floors are of T & G pine finished with No. 1 maple, but the first floor is reinforced concrete and the method, shown at Fig. 2, of installing the machine carrying wooden top floor is especially interesting. The necessity of providing a wood top of such sort that it would afford a secure attachment for machinery dictated the special scheme designed by Mr. Dean and shown in the annexed figure. Sleepers, 12 by 3 in., with edges beveled, were placed 18 inches on centers, parallel with the upper course of reinforcing bars, three bars coming between each sleeper. The bases of the latter were set a little below the upper reinforcing bars. The structural concrete was then placed, the sleepers being tightly locked to same. To these sleepers a wooden under floor of any desired thickness can be securely spiked

and machines easily and securely attached by means of lag screws.

This construction incorporates the spiking pieces directly into the structural concrete, the slight loss in strength being more than offset by the saving in weight of a filler of concrete between sleepers laid on top of the structural concrete of the floor. For textile mill work the wooden floor has certain manifest advantages over the granolithic surface, chief among which is the personal comfort of the operatives and the ease of placing machinery.

Power is supplied by a Rice & Sargent cross compound engine of 800 horse power built by the Providence Engine Works. It is provided with an independent jet condenser. A rope drive of very simple but effective design is used for the main transmission. A ropeway running across one end of the building opens from the engine room and extends to the full height of the main building. The main driving shaft of each floor extends into this ropeway and is driven by ropes coming directly from the driving sheave of the main engine. This drive is very quiet, easy to maintain in first class order, and effects a considerable saving of power usually lost in transmission.

As will be noted from the elevation, the building has been designed with a very large window area, so that there will be plenty of light provided in all parts of the mill, in spite of the width of over 100 feet. The building is sprinkled throughout, but fire escapes are provided in addition to the stair towers located at each end. The first floor is occupied with winding, doubling, and some roving machines. The drawing frames are all located on the second floor, while the two top floors are entirely occupied by the spinning frames.

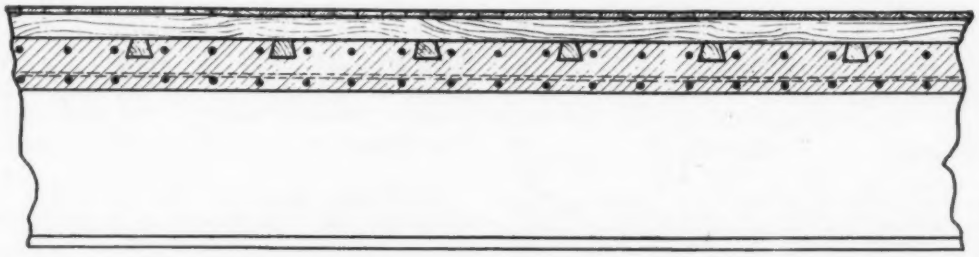


FIG. 2.

THE LIGHTING OF TEXTILE MILLS.

Part II.

BY W. C. ANDREWS.

In considering illumination, we must take into account three general characteristics—quality, quantity and economy.

Quality of illumination includes the color value of light as well as its freedom from flicker. The incandescent electric lamp has long been conceded to be the steadiest and best regulated unit for artificial illumination, but until the introduction of the high efficiency tungsten lamp, its yellowish light left much to be desired where careful color distinctions were required. The tungsten lamp, and more recently the mazda lamp, both give a pure, steady and practically white light under which the most delicately tinted fabrics may be satisfactorily compared and matched. For textile mills, therefore, the mazda quality of light is of great importance.

Quantity of illumination must not be confused with quantity of light when applied to the problem of mill lighting. The illumination is provided solely to produce the highest class of product with the least waste—that is, it is provided to see by. A small lighting unit properly placed and having a suitable reflector will give far more effective illumination than a bare lamp of twice the candle power, which throws its light indiscriminately to the surrounding space and into the eyes of the operative, but only incidentally lighting the work. The center of the

most brilliantly-lighted ball room would not have sufficient illumination to operate satisfactorily the general run of textile machines, for it is concentration of the illumination on the work that is needed. This does not mean, however, that each machine must have its individual lamp. There are many classes of machines that may be illuminated by a method of "group lighting," and for pickers, carders, slubbers and similar machines, a general illumination from rows of large lamps is adequate. Proper care, however, must be taken in the selection and placing of reflectors so that the greatest illumination is thrown on the machines and not on the walls or in the aisles.

Economy of illumination depends on the cost of current, maintenance of lamps and efficient distribution of the light. Here again it must be remembered that the users are paying for illumination at the work—not candle-power at the lamp. The unit must be of a type that will permit the use of scientific reflectors for concentrating the illumination at the right points with individual and group lighting, and give the greatest illumination on the "working plane" for every dollar spent. No advantage is gained by doubling the efficiency of the lamps if two-thirds of the light is sent in wasteful directions. Too much emphasis cannot be placed on the necessity of investigating the net gain in illumination when considering proposed lighting systems.

At 8 or 10 cents per kilowatt-hour for electric current, a type of lamp that saves two-thirds of the current even at an increased cost price of 50 cents per lamp, will save many times the additional investment in lamps. When the cost of current drops to 2 cents or less, the saving in operating cost ("operating cost" means the cost of current plus the cost of lamps), is not so apparent and it has remained for the engineering department of the National Electric Lamp Association* to place this matter clearly before the illuminating engineers of the country and to perfect the method of rating whereby the lowest operating cost can be obtained for any specific case.

The comparison of operating cost is most conveniently made on a basis of so much light for so much time, taking the "lumen-hour" (illumination and time) as a unit and obtaining the cost of lamp and current for, say 100,000 lumen-hours. The candle-power of an incandescent electric lamp as well as its life, depends upon the voltage of the circuit on which it is burned. For example, the candle-power of a 40-watt mazda lamp, made to burn at its best efficiency at 110 volts, is 32 candles and its life is 1,000 hours. If this same lamp be put on a 108-volt circuit, the candle-power will drop to 29.9, but the life will be increased to 1,300 hours; at 106 volts the candle-power is 28 and the life 1,700 hours. The nominal life of any mazda lamp is 1,000 hours, but by using it at 4 volts below its highest rated voltage, the life becomes 1,700 hours and the cost of lamp renewals per lamp hour is reduced over 40 per cent.

The mazda lamp is, therefore, rated for three different voltages, giving three different lengths of life and enabling the purchaser to select that life which gives the lowest operating cost (lamp and current). The following table gives the comparative figures for operating the most economical carbon and mazda lamps with a current cost of 1 cent per kilowatt-hour and less. It is based on the actual illumination so that the slight drop in candle-power in the lamp is eliminated as a factor:

It will be seen from the table that the 60-watt mazda costs less to operate, per unit of illumination, than the most economical carbon lamp, even when current is produced for less than one-fifth of a cent per kilowatt-hour.

The claims are summarized as follows: The mazda lamp gives the best quality of illumination; it is adapted for use in reflectors that are scientifically designed to give the greatest quantity of illumination at the right spot, and its economy is superior to any form of artificial illumination of similar quality, safety, convenience and reliability.

Of course, the mazda lamp, like any other piece of apparatus, must be used correctly if the maximum results are to be secured.

Comparative cost of 100.00 Lumen Hours, with Carbon and Mazda Lamps:

Carbon Lamp (3.5 watts per candle, 1700 hours life)
Mazda " (Bottom Voltage, 1700 hours life)

Prices of Lamps based on standard package quantities.

Cost of Current in cents per K. W. hour.	Carbon Lamp. Initial Candlepower, 16.	Mazda Lamps.					
		25 Watts Initial Candlepower 16.1	40 Watts Initial Candlepower 26.	60 Watts Initial Candlepower 43.5	100 Watts Initial Candlepower 72.4	150 Watts Initial Candlepower 108.6	250 Watts Initial Candlepower 188.
.2c.	$.160	$.237	$.167	$.152	$.125	$.122	$.110
.3	.200	.252	.181	.166	.138	.135	.124
.4	.241	.266	.196	.179	.151	.148	.138
.5	.282	.281	.210	.192	.165	.161	.152
.6	.323	.296	.224	.206	.178	.175	.166
.8	.404	.326	.252	.232	.204	.201	.193
1.0	.485	.355	.280	.259	.231	.207	.221

This necessity for specialized knowledge in installing lamps to the best advantage has led, within the past year or two, to the establishment of industrial lighting departments by several of the largest lamp manufacturers. The National Electric Lamp Association has also taken hold of the problem in a cooperative way for its twenty-two members. The mill owner or superintendent who is open to conviction need have no difficulty in securing, at no cost to himself, the necessary equipment to check the facts here given and to apply them to his particular case.

*The National Electric Lamp Association consists of twenty-two foremost incandescent lamp manufacturers who maintain a cooperative Engineering Department at Cleveland, Ohio, which issues impartial and unprejudiced data on all subjects relating to illumination.

The total value of exports of cotton goods of domestic manufacture for 1909 amounted to $31,878,566, compared with $25,177,758 in 1908 and $32,305,412 in 1907.

Of the total value of cotton manufactures exported, $3,866,438 went to Europe, $14,545,460 to North and South America, $12,783,920 to Asia.

THE WORLD'S FLAX PRODUCTION.

BY CHARLES RICHARDS DODGE.

The world's supply of commercial flax fiber is produced almost wholly in Europe, Russia contributing possibly three-quarters of the entire quantity. Asia produces about one twenty-fifth of the grand total, while North and South America, with an immense acreage of flax grown for seed, produce practically no fiber. The flax growing countries of Europe, in the order of their importance, are: Russia, Austria-Hungary, France, Italy, Belgium, the Netherlands, Ireland and Roumania. Other countries producing smaller quantities at the present time are Germany, Sweden, Servia and Bulgaria.

The flax of Asia is chiefly Russian, produced in Central Asia, Siberia and Transcaucasia. Japan produces quite a little flax for home consumption, while British India, cultivating over a million acres of flax for seed, produces no fiber whatever. Very small quantities are grown locally in other parts of the world, but the trifling yields need not be taken into account.

THE FLAX FIBER OF EUROPE.

The finest grades of commercial flax are produced in western Belgium, in the country through which flows the River Lys, the town of Courtrai being the center of the industry, for here is produced the creamy Belgian flax that sells for 20 to 30 cents per pound. Not only is the flax straw of this region retted in the Lys, but French flax straw is also brought, by rail or otherwise, for immersion in the "golden waters" of this famed stream. A darker, pool-retted flax is produced in the Waes country, and a considerable quantity of very good fiber is grown in the Brabant, the Flemish or "blue-flax," which is very dark in color. The seven recognized grades of Flemish flax include the fiber of Bruges, Thissalt, Ghent, and Lakeren. There are seven grades also of Courtrai flax, three grades of Walloon, and four of Fernes and Bergues.

It may be explained that three forms of flax retting are recognized the world over: dew retting, where the straw is spread over

a field or meadow in order that the gums and other soluble matters may be softened and washed out by the elements; pool retting, or immersion in pits, cisterns, or pools dug in the ground—sometimes in bog-holes, and retting in loose crates submerged in streams of running water, as in the Lys.

It may be remarked, however, that there is but one River Lys in the world, and three countries bring their flax straw to its banks. Ninety thousand tons of straw have been retted in this stream in a single year, giving employment to twelve or fifteen thousand laborers during six months out of the twelve.

It must not be understood that the superiority of Courtrai flax is due wholly to the magic (read microbes) of this turbid, ill-smelling stream, but in part to an intensive system of cultivation, with most careful soil preparation, including a systematic rotation of crops. For silky softness and luster the best grades of Courtrai flax are unrivalled, although French flax immersed in the Lys is high grade fiber. Such flax is worth $500 to $600 per ton in this country, though the average of the grades of Courtrai imported will be found much lower for the year 1908, about $345 per ton, or nearly 20 cents per pound. Fiber of 15 and 20-cent grades, however, is fine, soft and lustrous, yellowish gray in color, with a high tensile strength. The flax produced in Belgium ranges from 8 cents per pound upward. The flax trade of Courtrai is now almost exclusively in the hands of English and Irish firms, and the few other concerns employ Englishmen to select and class their flax.

The flax culture of France, which formerly was extended over a dozen or more provinces, is now confined to Nord, Pas de Calais and those immediately contiguous in the north, Lille being the center of the industry. The preservation of the remnant of French flax culture which now exists is directly due to the near proximity of the Lys, through immersion in which the superiority of French flax has been maintained. The fiber is a little darker than Courtrai, greenish gray in color, though showing a yellowish tinge. It is fine, flexible and lustrous, and is admirable for the manufacture of thread.

The production of dew and pool-retted flax in France, at the present day, is no longer profitable, and if barred from the River Lys, French culture would disappear. The figures which follow show the ratio of prices for French flax produced by the three systems:

Dew-retted fiber, 7 1/2 to 10 cents per pound.

Pool or tank-retted fiber, 10 to 15 cents per pound.

River-retted fiber, 15 to 30 cents per pound.

As the cost of cultivation has been reckoned at $48 (600 francs) per acre, the farmer grows flax at a loss if his crop falls below that figure; hence the decline in French flax culture. As in Belgium the present culture is marked by systematic methods with skillful handling, and this has served to keep French flax at a high standard of excellence. Only the lower grades of French fiber are imported into the United States, and in very small quantities—in 1905, 700 tons, and in 1908, 90 tons, valued at $260 to $287 per ton. The markings of French flax indicate the names of the districts where produced.

The best of the Dutch flax is very nearly in the same plane of quality as the flax of Courtrai and Northern France, and all of it is fairly good. The flax area in Holland has been somewhat restricted in the past few years, and I am informed by Mr. G. H. Hasselman, Secretary of the Netherlands Society for the Promotion of the Flax Industry, that a large proportion of the crop is now exported in the form of straw to Belgium merchants, to be retted in the River Lys, thereby losing its identity as Dutch flax, although the Lys waters add to its value by giving it a better color, and imparting to the fiber a strength that makes it prized by spinners. Holland flax has been in demand for the manufacture of the finest description of linen and damask as well as thread. Friesland flax is dark, sometimes hard and dry and difficult to spin. The flax of Feeland is light, and flexible. "Blue flax" is grown in Southern Holland. Six grades of Dutch flax are recognized in the American trade.

(To be continued.)

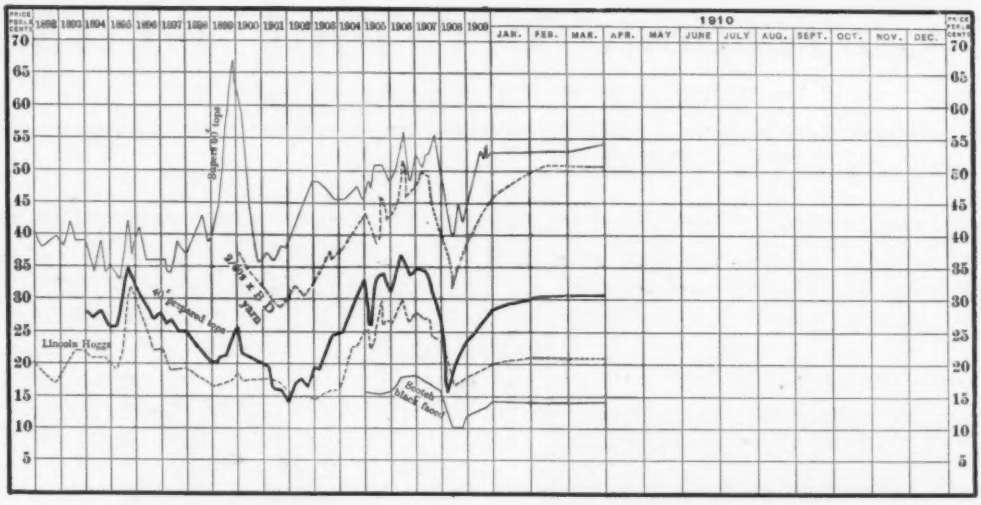


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS AND WORSTED YARN AT BRADFORD, ENG.

THE BRADFORD MARKET.

(By Our Special Correspondent.)

A woolcombers' strike which developed suddenly ended with only a week's loss of work. This and the opening of the March series of sales in London have been the feature of the month in the wool market. It became immediately apparent that American buying in the London sales was heavily restrained and the light conditioned crossbreds that Americans affect have been going 5 to 10 per cent. cheaper than in January auctions. American wool buyers announced on their coming that the worsted trade is not so good in America as they quickly found it to be in Yorkshire. One American in whose word reliance is customarily put, suggests that they are not going to bid up the English clip this year. Failing a marked improvement in prices for fabrics in the United States he does not see how the prices now quoted for English wools are to be paid.

The firmness of merinos and fine crossbreds in London reflects the strength of the English Continental manufacturing demand. Consumers have never really responded to the January advance in coarse crossbreds and the general decline in them of 7 1/2 per cent. marks a receding from an untenable position. Up to the time of writing the fall in crossbred wool has made no substantial impression on the resultant tops. There is plenty of strength in the market for fine material and most parties to the worsted industry have all—and more than all—that they can do. But the prices and still more the muddle over deliveries are putting a premium on tweeds. The carded woolen branch is very fully employed on export orders and has good prospects for the winter. Dealers do not think that wool can have any heavy fall this year, but it can be taken as a fact that manufacturers and their customers are not going to help prices further up.

A great point has been made of the scarcity of Scotch blackfaced wools, but these professions deserve to be received with caution. A broker of wool of this quality would not agree that there are 10,000 bags lying in Glasgow warehouse, but he admitted there were 8,000. The market is therefore not without some 2,500,000 pounds and the new clip is approaching.

During the first six months of 1908 Russia purchased raw cotton to the value of $35,765,000, but for the same period in 1909 that trade, which is principally from the United States, dropped to $18,878,500.

Correspondence and Notes

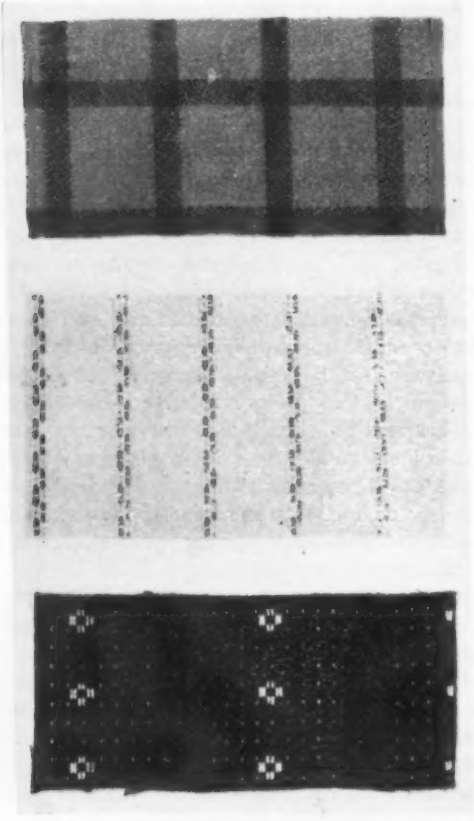
UPON TEXTILE TOPICS AT HOME AND ABROAD

NEW STYLES FOR DRESS GOODS.

BY J. W.

Fig. 1 is a new style of cloth doing very well in fancy checks of varied colorings. The weave and drafting for the heddles are given at Fig. 2, where two repeats are

FIG. 1.



FIGS. 3 AND 6.

shown. For the dobby plan one-half the design will be required, to weave with 6 harness:

Warping pattern:

48 threads light green
16 threads dark brown
48 threads light green
16 threads dark green

128 threads per pattern

The check pattern is similar to the warping pattern. The particulars for manufacture are: 44 dents per inch in reed, 32s

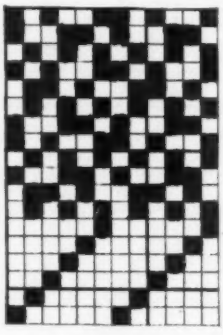


FIG. 2.

Egyptian warp; 80 picks per inch of 40s Egyptian or American for the filling. After weaving, the cloth is slightly raised on both

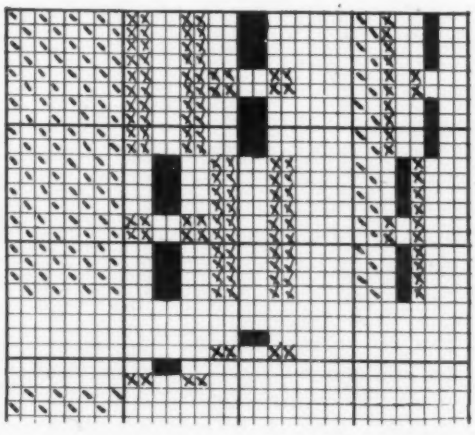


FIG. 4. FIG. 5.

sides. The cloth is known as "crepe delaine."

Fig. 3 is a neat style of high class cambric shirting, which is in favor at present. The

figure stripe is of coarse count, and in various colors is very effective and new. Fig. 4 gives the full design and drafting for the heddles, the ground being repeated 5 times. Fig. 5 is the dobby plan which requires 6 harness.

3 Dark Brown Mercerized 2/40s	} = 2 dents.	
1 " " Ordinary 24s		
24 = 6 times above	= 12	"
2 Dark Brown Ordinary	} = 2	"
1 White Mercerized 2/40		
4 Dark Brown Ordinary	} = 4	"
1 White Mercerized		
10 = twice above	= 8	"

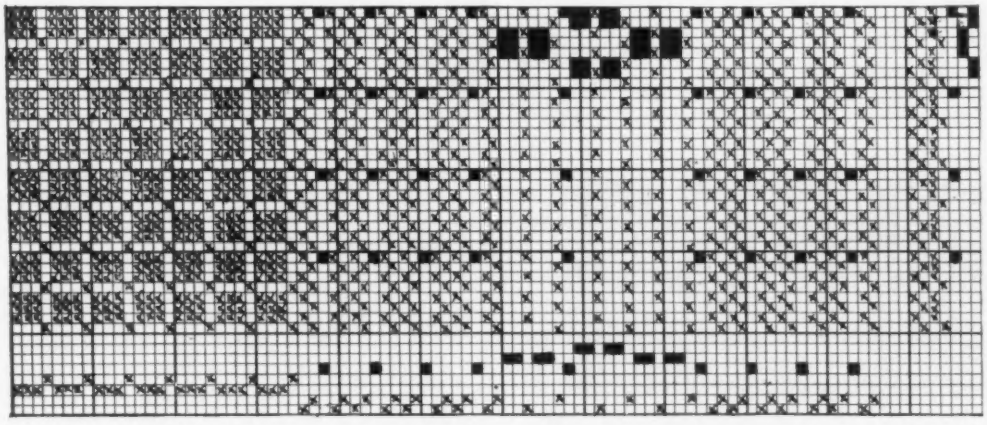


FIG. 7.

FIG. 8.

Warping pattern:

40 threads white	32s	= 20 dents	
2 " "	20s	} = 1	"
2 " navy	20s		
4 " white	20s	= 1	"
2 " navy	20s	} = 1	"
2 " white	20s		
52 threads per pattern,		23 dents	

The 20s threads must be placed on a separate beam to ensure good weaving. The particulars for manufacture are: 40 dents per inch in reed, 2 and 4 threads in 1 dent, 32s Egyptian and 20s super-American for warp; 80 picks of 32s Egyptian for the filling.

Fig. 6 is a new style for cotton dress goods and suitable for dark colors, with white mercerized yarns for the spotting. The full design and drafting for the heddles are given at Fig. 7. The solid squares on the design indicate the white spotting threads and crosses for the ground weaves. Fig. 8 is the dobby plan for 7 harness. The particulars for construction are: 40 dents per inch in reed, 1, 2 and 3 threads per dent, 24s American and 2/40s mercerized for warp, 44 picks per inch of 16s American for the filling.

2 Dark Brown Ordinary	= 2	"
2 White Mercerized 2/40s	} = 1	"
1 Dark Brown Ordinary		
3 = as above	= 1	"
1 White Mercerized 2/40	} = 1	"
2 White Mercerized 2/40		
1 Dark Brown Ordinary	} = 3	"
9 = 3 times 2+1 as above		
1 White Mercerized 2/40	} = 4	"
4 Dark Brown Ordinary		
10 = twice above	= 8	"
1 White Mercerized 2/40	} = 2	"
2 Dark Brown Ordinary		
85 threads	50	"

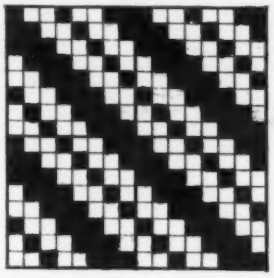


FIG. 11

Warping and denting pattern:

Fig. 9 is another style made to the same particulars as Fig. 8. Two or three color

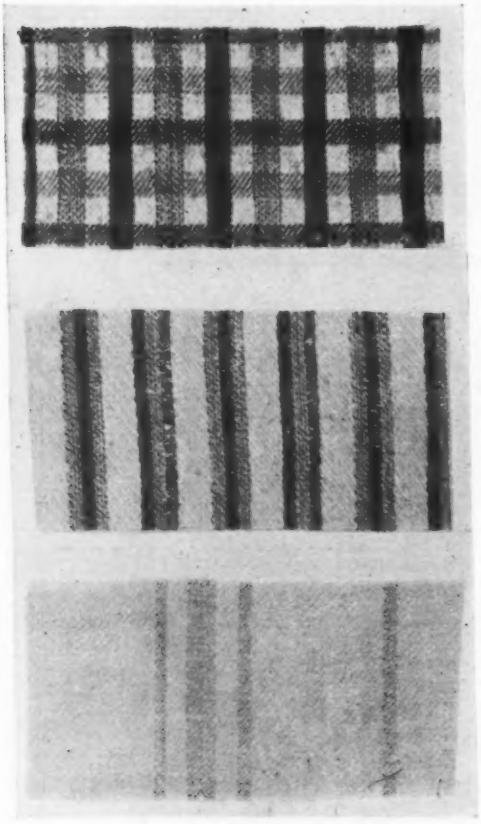
patterns are fashionable, such as black, black and white twist, and slate, brown, brown and white, twist and cream.

Warping pattern:

16 threads black 40s
16 threads white 40s
16 threads black and white twist 2/80s
16 threads white 40s

64 threads per pattern

FIG. 9.



FIGS. 10 AND 12.

Check pattern:

14 threads white wool 48s
14 threads black wool 48s
14 threads white wool 48s
14 threads grey mixture wool 48s

56 shots per pattern

The weave is a twill. It will be noticed that the drafting is turned in the heddles every 16 threads.

Fig. 10 is a stripe that is finding favor in shirtings and blouse cloths. The particulars of warp, reed, filling and counts are similar to those of Fig. 8 and Fig. 9. Fig. 10 can be produced in varied colorings with effect. Dark grounds and white stripes are also required.

Warping pattern:

24 threads white 40s
8 threads black and white twist 2/80s
8 threads black 40s
8 threads black and white twist 2/80s
24 threads white 40s
8 threads black 40s
7 threads black and white twist 2/80s
9 threads black 40s

96 threads

The weave, Fig. 11, is a twill which requires 8 harness. Every 24 threads are turned in the drafting.

Fig. 12 is a wool and silk stripe dress cloth which is very fashionable at present. White, cream, light green, lilac, sky blue and light pink grounds, with white silk stripes are most desired. The particulars for manufacture are: 36 dents per inch, 30s wool and 2/80s spun silk, warp; 64 picks of 30s wool for the filling.

Warping and denting pattern:

68 threads	white wool,	34 dents
12 threads	white silk,	3 dents
68 threads	white wool,	34 dents
12 threads	white silk,	3 dents
12 threads	white wool,	6 dents
24 threads	white silk,	6 dents
12 threads	white wool,	6 dents
12 threads	white silk,	3 dents
220 threads		95 dents

The ground weave is a 4-leaf twill and the silk stripes a 5-end satin.

As a result of sheep killing it is necessary to import annually over 200,000,000 pounds of foreign wool, costing over $40,000,000, to supply the demand.

THE EFFECT OF DOUBLES AND SINGLES ON THE SIZE OF THE YARN.

BY B. M. PARKER.

In running a drawing frame we notice, as the cans run out and a new end is put up, that often a lap of several inches of the new and old ends is made and allowed to go in the rolls, or that the old end sometimes runs into the machine before the new end is put up. This causes the drawn sliver to be uneven in weight and should be avoided as far as possible. When the two ends are lapped over each other we have, for a short distance, seven ends feeding in the drawing frame and a correspondingly heavier sliver on the front, while, if the old end is allowed to run into the machine before the new end is put up, we have only five ends feeding into the drawing frame and a correspondingly lighter weight sliver on the front.

Most of this is due to carelessness on the part of the operative, though not in every case, for a bad working stop-motion will sometimes refuse to operate immediately, and thus the frame will not stop in time to prevent the broken end being fed into the machine and the regularity of the sliver destroyed. The person in charge of the section is directly responsible for the correct operation of the machines under him and should see that the stop-motions act promptly and early enough to stop the frame before the end has been fed into the rolls. The operatives should be watched to see that they use care in putting in new cans and piercing broken ends so as not to allow any doubles or singles in the sliver.

Carelessness in creeling the fly frames also causes a large number of doubles and singles. Many good fly-frame hands, judged from the amount of production turned out, are the most careless in their creeling. They are in a hurry and thinking only of the hanks turned out. In creeling they will stick the end of the sliver from the fall bobbin in the roving guide and let it catch up, or twist the end around one of the slivers feeding into the machine, and allow from one or two inches to as much as six or eight inches. I have seen as much as a foot or more of the sliver from the empty bobbin, just taken out, to be fed into the machine with the other two ends. If the bobbin runs out before they put up a new end and several inches of single roving is fed into the machine, no attempt is made to stop the frame and pull this single off the bobbins on the front. When the single runs long enough for the end to get slack and break, the defect will be remedied, but only for a few inches. If the end does not break down, many operatives never think of trying to get rid of the single, but let it go to the next frame.

It requires some skill to creel a frame as it should be done and give just the lap necessary to the roving to keep from forming thick or thin places. A large portion of the singles made on the fly frames break while in the creel of the next frame, but a certain proportion do not break, but fall off the bobbins all right and pass to the rolls of the next frame. As a result there is a decrease in the final weight of the spun yarn.

An end on the front of a fly frame will break and wrap around the roving next to it and become twisted with that roving, causing a heavy place. In every case of this kind the operative should break this roving and pull all the double roving off the bobbin.

The same points regarding the creeling of fly frames applies equally as well to creeling the spinning frames. Unless a certain amount of care is exercised there will be either a thin or thick place made in the yarn every time a bobbin runs out and is replaced with a full bobbin, or an end breaks and is pieced up. This is due to the ends of the two rovings overlapping or not meeting. Anything that tends to cause an increase or decrease of the regular amount of material to be fed to a machine, makes an increase or decrease in the resultant weight of the finished yarn, and this destroys its evenness.

Let us take a specific case, do a little figuring, and see exactly what variation, from the standard size, some of the above-mentioned cases of doubles and singles will cause. Let us assume a mill running on 30s

carded yarn with the following weights and drafts:

120 yds. of 30s yarn weighing 33.33 grs.; spinning frame draft, 10; double roving in creel.

Fine fly frame: Weight of 12 yds. fine roving, 16.66 grs. = 6 H. R. Draft of fine fly frame, 6.

Intermediate fly frame: Weight of 12 yds. intermediate roving, 50 grs. = 2 H. R. Draft of intermediate fly frame, 5.

Slubber: Weight of 12 yds. of slubber roving, 125 grs. = .80 H. R. Draft of slubber, 4.

This is for a drawing frame sliver of 41.75 grains per yard, which we will call 42 grains. Assume drawing frames to have six ends up and a draft of six, giving a 42 grain sliver on the cards.

We will assume that the drawing frame operative, in piecing up an end, makes a lap of several inches, giving seven ends up instead of six. This will cause the weight of the sliver to be 49 grains per yard instead of the standard weight of 42 grains. This heavy sliver goes to the slubber and will give a .68 H. R. instead of an .80 H. R.

Assuming this .68 H. R. to be donbled with a normal .80 H. R. in creel of intermediate fly frame, the resultant roving on the front of the frame will be 1.84 H. R. instead of 2 H. R. Carrying this figuring through the fine fly frame and the spinning frame and assuming, in each case, that the heavy roving will be doubled with one of correct weight, we find that the yarn, instead of running 33.33 grains to 120 yards and equal to 30s yarn, will run 34.06 grains to 120 yards, or 29.36s yarn.

By a similar method of figuring and assuming, as before, that the light roving will, in each case, be doubled with one of normal weight, a single on the back of the drawing frame, caused by carelessness or delayed action of stop motion, feeding in five ends instead of six, will give a 35 grain sliver on front instead of a 42 grain sliver and a yarn on spinning frame that will run 32.66 grains to 120 yds., equal to 30.6s yarn, instead of a 30s yarn.

If the single or double on the back of the drawing frame was only three inches there will be a length of 600 yards of yarn produced by the spinning frame which would be too heavy or too light. This variation is not large enough, probably, to be noticed, but is still present and is traced back to carelessness in piecing up. In running coarser numbers, where only two fly frames are used and the yarn spun from single roving, the variation from the standard size would be much greater, though the length of yarn affected would be very proportionately less.

These figures are based on the assumption that the uneven roving will be doubled with a normal weight roving in every case. There is a chance that a heavy roving will be doubled with a light roving and vice versa, thus equalizing the difference in weight. There is an equal chance of a heavy roving being doubled with a heavy roving and a light one doubled with a light one. This, instead of overcoming the variation, will increase it and thus get farther away from the correct size. Where we are looking for uniform weight of yarn, nothing is too small to overlook.

There is no chance to make singles on the slubber, but an end may break and catch on the one next to it. In every case this should be pulled off and not allowed to go to the next frame. Carelessness or negligence on the part of the operative is often responsible for such roving going to the intermediate and running in with the good roving. A double roving, 6 inches in length, produced on the slubber in this way and allowed to go to the next machine, will make 50 yards of yarn on the spinning frame that will reel 26.55s instead of 30s. This is certainly worth looking after, for a variation of that amount and length in our filling will have a noticeable effect on the goods.

In creeling the intermediate fly frame, if the ends of the rovings being pieced together are allowed to lap for 3 inches only we will get 25 yards of yarn that will reel 26.7s instead of 30s. A single for 3 inches while creeling will give 25 yards of yarn that will reel 34.3s instead of 30s.

A doubling of the ends for 3 inches in creeling the fine fly frame will make 5 yards of yarn which will reel 24s instead of 30s, while a single allowed in the creeling for 3 inches will give 5 yards of yarn that will reel 40s instead of 30s. In creeling the spinning frame, a double on the back will make 20s yarn and a single will make 60s yarn, while for every inch of double or single we will get 10 inches of heavy or light yarn.

From the foregoing it will be seen that every time an end breaks or a bobbin runs out and is pieced up there is a chance to make uneven yarn, and that, while trying to spin 30s yarn, we may spin as high as 60s or as low as 20s with almost any number between the two extremes. The nearer the spinning the single or double occurs, the greater the variation from the standard size, while the farther from the spinning, the greater will be the length of yarn affected. Every variation from the normal in any process has its corresponding effect upon the final size of the yarn and consequently its evenness.

As has been shown, the common, everyday and absolutely necessary operation of putting in full bobbins when the old ones run out, unless carefully done, may greatly affect the final size of the yarn, granting that the card slivers are correct in weight. When we consider how often this creeling has to be done and then note how careless some of the operatives are while creeling, we need not be surprised that the cloth will show light and heavy places in the filling or that the yarn will vary considerably in size.

To get the best results every detail must be watched and every effort put forth that will help to get regularity and evenness of product, in addition to the care and effort necessary to get it clean. Nothing is really small enough to be disregarded. The large faults and errors and mistakes are so apparent as not to be overlooked, while the numberless small points are not so readily noticed, but have their effect on the final product.

ENGLISH NOTES.

(From Our Special Correspondent.)

The general trade of the country continues to recover its tone and good quantities of all sorts of textiles are going into domestic consumption. Exports advance all round except in cotton yarn and a significant matter affecting textiles at large is the improved shipments to Continental countries. Consumption is palpably expanding in Europe and South America and no fault is found with the takings of the United States.

Profits are still far off in the cotton industry and the outlook is not rosy. In wool manufacturing some are on lower margins than they would like, but the general state is amply satisfactory. It seems to be settled that wool will be no cheaper this year and American wool buyers now in this country have led dealers to expect large purchases for New England. One of them speaks confidently of heavy demands on England and Australia by August.

* * *

Although a good deal of ingenuity has been expended in making worsted dress-stuffs to fit the present high prices of material, there is reported a distinct feeling that tweeds will be much in request this winter. Some patterns in nap effects have been prepared and are being shown experimentally. In worsted dress goods for the fall, broad diagonals with two-fold warp and single filling are unmistakably favorites.

* * *

The short crop of American cotton and the dragging misery of short time in the mills have put new resolution into the British Cotton-growing Association. Shopkeepers, saloon keepers, employers and employed in all trades allied to cotton manufacture are to be called upon for funds. The workpeople in the industry are to contribute $150,000 during the next fifteen months at the rate of a penny (2c.) per month. The Association, in a word, is coming before the public like an infirmary.

It is told how last year the Association raised 33,000 bales and how in five years,

given funds and favorable seasons, it expects to be growing 200,000 bales annually. The Government has granted $150,000 and is financing new Nigerian railways costing $10,000,000. A sum of $200,000 has been subscribed by individual members of the Master Spinners' Federation and now both great and small are to do a new share towards the revival. The Association was not dead before the last misfortune came along, but it had settled down to a routine jog trot, which carried it forward neither fast nor far.

The fact of course remains that it is American-grown and Egyptian-grown material that our mills principally want and those are the sorts the machinery has been designed to spin.

* * *

A wool merchant, T. H. Moore of Huddersfield, puts the world's wool supply at approximately 7,000,000 colonial bales. These bales vary in weight according to the condition of the clip and the proportion of crossbred wool. Taking the recent average of 330 pounds, the estimate is thus 2,310,000,000, greasy; a total which roughly accords with Helmuth Schwarze's views. Mr. Moore finds that 34.4 per cent. of the whole is grown within the manufacturing countries; that Australia provides 32.8, South America 18.4, North America 11.7, Europe 17.8, South Africa 5.4 and the United Kingdom 5.1 per cent. of the total.

Mr. Moore is interested in the African clip and went on a missionary tour educating the Dutch farmers there. Agreeing that the natural difficulties are greater in South Africa than in Australia, he looks forward to a largely increased African supply and hints at a million bales as an eventual possibility. Scab and locusts interfere with pastoral calculations in Africa, but with present methods of winter feeding and the selective breeding that is being done progress is assured. South Africa has been backward and has increased its wool production only 22 per cent. in twenty years, whereas Australia added nearly 60 per cent. in the same period.

It is plain that new English worsted machinery is still going in quantity to the United States. During February there was a shipment of $162,870 worth of machinery recorded by the Bradford consulate. The amount is more than twice that of February of last year and brings the total for two months about a quarter million dollars.

* * *

Worsted spinners breathe freely again now that it is decided that the removal of cap waste from a cap-spinning frame is not "cleaning machinery while in motion." The fluff is removed from the rollers and topboard by a child using his hand and a stick. Had the prosecution of Mark Dawson & Son succeeded Bradford might have been in the interesting position of having to stop its cap frames for cleaning every few minutes.

The combers' strike gives spinners more concern. The Woolcombers' Union is affronted by a slight put on it by the employers, resents the employment of non-union men, wants a substantial advance in wages and a uniform night turn of twelve hours with two half-hour stops for meals. There are no considerable stocks of combed material and the strike in its earliest stage is causing great anxiety to all who are dependent on commission combs. Combers, spinners and weavers are up to their necks in engagements and a prolonged stop means a dreadful mess. The 50 cents a week taken away a year ago from the wages of Bradford piece dyers has been restored.

* * *

From a summary of financial results it is clear that last year was in no sense a bad one for some textile enterprise in this country. The Bradford Dyers' Association, despite the short trade in dyed cottons, made $1,480,000 and pays 5 per cent. The Velvet & Cord Dyers pay 7 per cent. Woolcombers, Ltd., in the face of dear soap and oil, break the record with $150,000 net profit and a dividend of 10 per cent. The British Cotton & Wool Dyers ("slubbers") had one good half year and a better one is now closing. The Calico Printers have $980,200 net on the last six months' trading. G. Ing-

ham's, worsted spinners, pay 10 per cent. Mark Oldroyd's, manufacturers of medium tweeds, maintain their position and promise better things to come. J. T. & J. Taylor, a profit-sharing Batley company, pays 12 1/2 per cent. The items are all more inspiring than anything that can be said on behalf of the cotton trade and there is no apparent reason why most of the companies named should not fare better still during this year.

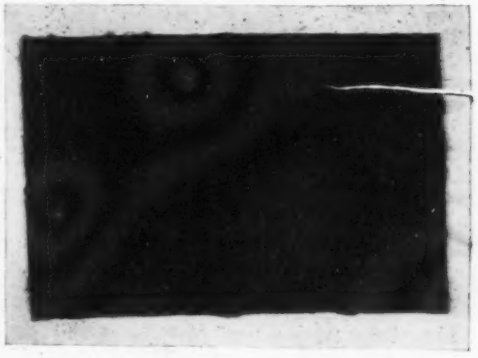
* * *

Nobody returning to the Lancashire and Yorkshire factory districts after a lapse of years would fail to notice the large use of motor traction now made in the textile industries. For a long time new machinery has been delivered by motor larry and most of the dyers are using gasoline or steam wagons. Large mills have their own motors for coals and raw materials. We use the highways in preference to railroads a great deal and horses are everywhere being superceded. Cars are in waiting every morning at the houses of the works managers of one large combine. They are the company's cars sent to ensure that the manager shall be at work by eight promptly. Cars are bringing round drysalters' and others' salesmen to the mills and the travelers get through two days' work in one as the consequence. No appointment was made to a recent vacancy caused by the death of a dyeware salesman. The drysalter put the colleague of the deceased man in possession of a 12-15 h. p. car.

* * *

Carded woolen manufacturers aiming at first class style in the lowest-priced goods may be urged cordially to inspect a couple of patterns that are on view at the Boston offices of this journal. A description hardly does justice to their merits, but it may be explained that goods of this sort have done extraordinarily well with the wholesale clothiers for boys' overcoatings. The cloth weighs 16 ounces or less per yard, 54 inches wide. The warp is of grandrelle white and black or color and black cotton with distant stripings, the filling is self-colored shoddy loosely spun and twisted with a black supporting cotton thread that is invisible except on untwisting. The weave is a twill and the cloth will deceive the inexperienced into guessing its value at about $1.50 per yard. Before the advance in cotton made itself felt acutely the actual price was around 42 cents (1s. 9d.). Now it is about 48 cents (2s.) a yard. Fabrics of this type are made at Slaithwaite (Huddersfield) and also in Leeds and are woven by the mile.

One hardly knows how seriously to take the repeated assurance of a maker of this cloth that his gross profit is 25 cents per piece. In any case he has grown rich in the business and it is probably calculation-profit that he means. The mill works of course to beat the calculation and more extraordinary statements of the same sort have been heard. Woolen manufacturers can be named who could not by any arithmetical process figure out any profit per piece. None the less there is a profit of respectable dimensions at the end of each year. However, it is as an instance of how clever a use one can make of



SAMPLE OF CARDED WOOLEN GOODS.

low materials that the patterns are sent. A better profit than a shilling a piece can be promised to American makers in advance.

[We have analyzed the fabric to which our correspondent refers and obtained the following results:

Weight, 13.2 ozs. per yd., 55 in.

Warp, 56 threads twist per inch, made of 19 1/2s single cotton and 28s single worsted.

Filling, 39 threads twist per inch, made of 19 1/2s single cotton and 3.2 runs carded woolen.

Weave, 3 leaf warp twill to right.

The sizes are for the yarn as it lies in the cloth without allowances for take-up or loss of weight in finishing. The cloth is very attractive and well worth investigation by carded woolen manufacturers. The samples can be seen at our Boston office.—Ed.]

* * *

Means more energetic than scientific are taken by some of those who stand in relation to our worsted mills as the president of the company stands to American mills. One of these manufacturers, who has all but retired, thunders weekly for the wage-book. He goes through it with an eye to finding which weavers earned less than a pound ($5) a week. These culprits are brought before him for examination and sent back with fleas in their ears to the loom. "If you don't earn five dollars," he demanded hotly, "where the Heck do I come in?"

All the goods are sent by rail and he demands next the railway accounts. Woe to his sons and woe to his salesmen if the bill for freight falls below a certain standard amount. They are an idle, worthless, etc., lot of fellows, ruining the mill by their failure to sell goods. There may be better ways, or worse ones, of keeping tab. This way has served one old man's turn fairly well and for all his savagery he is esteemed better in the mill than another elderly gentleman known to the help as "t' owd Sneck-mender." It seems difficult to maintain proper respect for an elderly employer whose main worry is the state of the hinges and catches of the doors of the departments and who is constitutionally incapable of letting well alone.

* * *

Formic acid is a good deal used in English dyeworks dyeing in replacement of organic acids, both in dyeing or in chroming. It has hitherto been obtainable from only one source, but a second maker having begun its manufacture, the price has fallen from $10.50 to $9 per hundredweight and lower rates are offered for contracts. Presumably new competition has something to do with the rebates now offered for two years' contracts for synthetic indigotin. From the price of 16 cents a pound there are allowances rising to 5 per cent. on a 300-ton contract. It is understood that the calico-printing combine has given an order for the formidable quantity that qualifies for the utmost discount. The comments of merchants of natural indigo upon these transactions tend to be sharp.

* * *

On farmers' own confessions it is often a farm dog that plays havoc with another farmer's flock of sheep. A farm dog it is that has cost its owner $110 for a frolic among sheep grazing within the city confines at Bradford. With another item of proof the bill would have been doubled. The dog has to be seen on the farm and to be subsequently identified before a claim can be made good. The instance makes clear the English law is on the side of the man who has sheep worried and the police assist in protecting his property. Farmers rightly resent the mere chasing of their animals by dogs and sometimes publish notice of intention to destroy any caught wandering on the farm.

* * *

The combers' strike subsided as quickly as it grew and on terms of settlement distinctly favorable to the employed. Wages below $3.75 are advanced 12 cents at once with 12 cents to follow in August and wages above that limit are advanced 50 cents in two steps. The night workers get their two half-hour breaks for meals, the operatives agree to refer their complaints in the first place to their own employer and a wages board for the settlement of future trouble is constituted. The Bradford dyeing industry which, like woolcombing, employs rough labor, has the happiest experience of the benefits of a wages board. The meetings have not been without friction and one 10 per cent. general reduction has had to be enforced, but to get through ten years without a strike of dyers and to be entering on another period of peace is an achievement and a recommendation of no mean weight.

It is stated that for every 100 men employed in the cotton mills of France there are 58 women and girls, in the woolen mills 69, and in the silk mills 71.

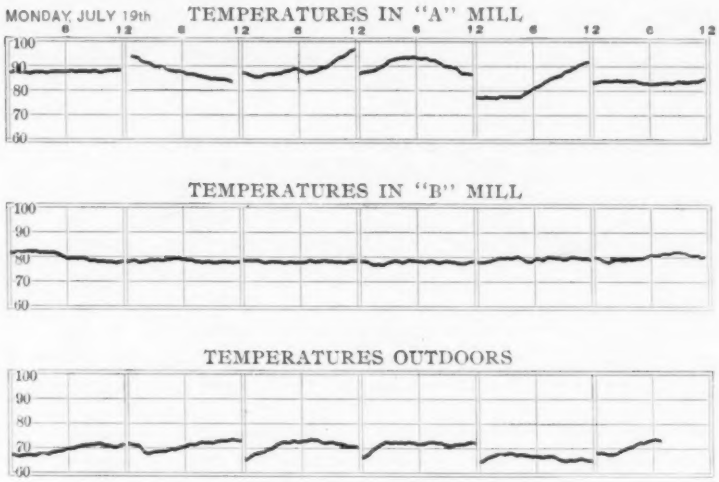
COOLING A MILL WITH THREE GALLONS OF WATER A MINUTE.

Utilizing to the fullest extent the floor space for high speed textile machinery has resulted in producing mill temperatures that are not only uncomfortable, but which are injurious to the health of the operatives and which are not best suited to the proper working of the fibers.

Spinning room temperatures as high as 100° F. are common, and of 110° are numerous, while through the summer some readings of 120° may occasionally be found. These high temperatures are principally due to the heating effect of the high rotating machinery.

Every one realizes that high temperatures are very fatiguing to the human system, and no matter how willing is the operative, nature will soon put on the brakes. Applied brakes are not conducive to a large production, be they applied to machinery or men. The cooling mediums are plenty of fresh air and from one-half to five gallons of water per minute. This water does not have to be cold. It can be taken from the city mains or other supply source.

During the hot part of the summer days fresh air from out of doors can be reduced in temperature from 12° to 18°, simply by evaporation. When air and a spray of water at normal temperature are brought into intimate contact, each grain of moisture absorbed per cubic foot will reduce the temperature of the air about 8°. By the introduction of this cool air in sufficient quantities to take up the heat in the spinning room, the temperature can be maintained throughout the summer below 85°, with an occasional day possibly as high as 90°. In spinning rooms equipped with the Carrier system of air conditioning, the temperature will in hot weather usually be from 10° to 20° cooler than a mill not so equipped, but with the other conditions the same.



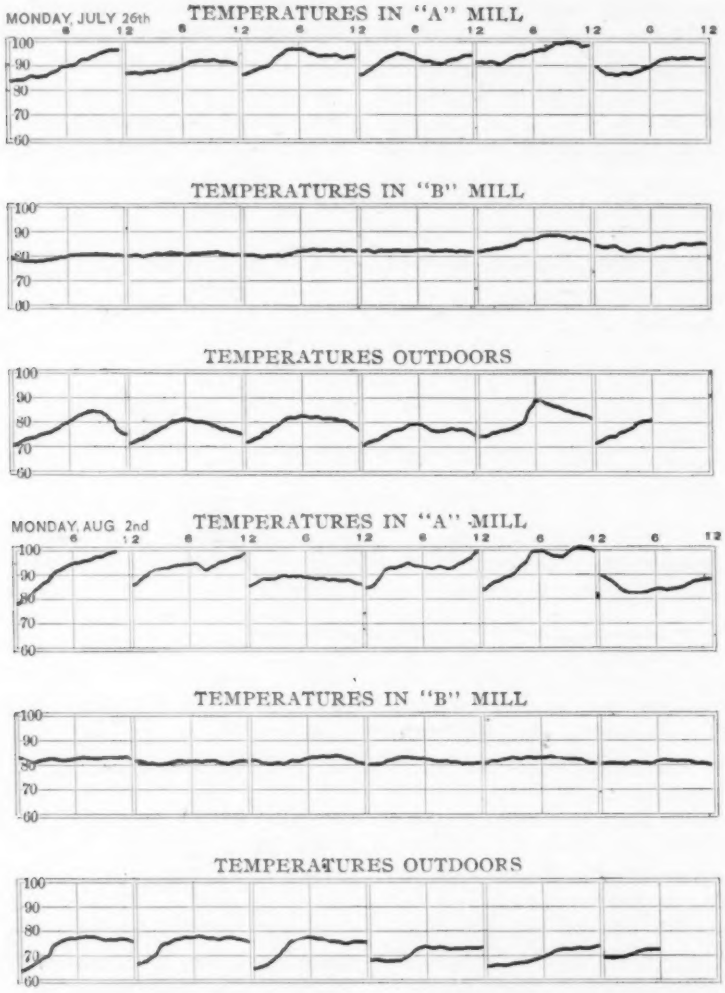
We show herewith temperature curves taken last summer beginning July 19 and ending August 7. The temperatures were recorded by Bristol recording thermometers, one being taken out of doors, and the others in the ring spinning rooms of two mills. The mills are located within two hundred feet of each other, which we designate as A and B mills, and each has the spinning room on the top floor. The conditions are as near alike as it would be possible to procure for a comparative test. Mill A is equipped with the Carrier system of air conditioning and in this mill the temperature exceeded 85° only once in the three weeks

and then the outside temperature was as high as 90°, or two degrees hotter than the mill, which only reached 88°.

It will be noted how very regular the temperature in the mill remained, and that whenever the outside temperature went above 80° then the spinning room in this mill was cooler than the outside.

The "B" mill had temperatures which exceeded 90° on every day but one; on four days it reached 100° or over.

The air conditioning apparatus used in "A" mill is located in the basement and consists of two Carrier humidifiers, with heating coils, steel plate fans with motors for driving. The air is conveyed from the fans to the rooms above by air ducts under the floor and through the pilasters.



Switzerland leads in the value of laces imported into this country, with $12,591,620, or more than one-third of the total, and is followed by France with $9,125,671.

The imports of wool into the United States were twice the imports of the year before, and the American wool production rose only from 311,000,000 to 328,000,000 pounds.

CARD GRINDING.

(From the Grinding and Mounting of Card Clothing recently published by Dronsfield Bros., Ltd., Oldham, England.)

(Continued from March.)

This is done as follows: From the point, A, Fig. 18, measure off 18 inches, and extract from the third rib of this portion, gradually tapering at the end into the second rib; now measure off a further 18 inches, and extract the teeth from the second rib, gradually tapering at the end into the first rib; now measure off a further 18 inches, and extract the first rib gradually until the fillet attains the full width of 8 ribs.

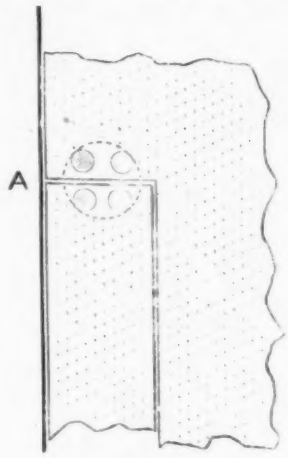


FIG. 18.

Thus we have a triangular-shaped piece from which the teeth have been extracted on the outside edge, but the foundation must not be cut away until the joint has been made at point A, which is accomplished as follows: Put tension upon the fillet until the indicator registers 350 lbs.; doffers, 230 lbs. Then examine the fillet at this point, A, to see if the teeth are pulled out sufficiently to allow of two tacks being inserted over the upper half of the wood plug, as shown. This done, and the fillet well held, the triangular piece of foundation must be carefully cut away from the joint as far as the point where the filleting attains its full width. Now continue winding at this tension across the cylinder until the right hand edge is nearly reached, say about 1 1/2 inches from the edge; tack the filleting securely in two or three places, and take off the tension. Then wind the remainder of the fillet by hand until it arrives at the edge of the cylinder, at which point of contact mark the fillet with chalk; two or three inches above this point extract a few teeth from the sixth, seventh and eighth ribs, thus forming the basis from which to work in extracting teeth, as previously done at the other end, but in the reverse order. The finishing tail end is then shaped and fitted in all round the circumference of the cylinder to form an unbroken circle or row of teeth at the extreme edge of the cylinder, producing the "straight-edge" or "inside" tail end, which is generally considered to be the best means of card fillet mounting. The tail end having been shaped and tacked in position, the cylinder should be allowed to stand a little while to permit the filleting to find its position; then it may be secured all across and round the cylinder by tacking to the plugs.

We have described the manipulation of the cylinder fillet starting with three ribs, but there is no hard and fast rule, many preferring to commence with four ribs, the spaces varying accordingly.

2. Flat Mounting: So much for cylinders and doffers. The other carding surfaces of the revolving flat cards, the flats proper, are, as previously stated, usually sent covered complete by the machine maker, and, in the case of recovering, the clothing is done by the card maker. The old system of clothing flats with lead rivets is now obsolete. Many kinds of clips are in use at the present day, and each kind claims some particular improvement over the others. All, however, aim at the same result, the stretching and holding of the card sheet on the iron flat without possibility of slipping and blistering. The simpler form of "clip" is in the shape of a strip of wire, one edge of which pierces the cloth edges and is clinched underneath; the other edge is simply bound round the flange of the flat. The "clipping" of flat tops, although simple, has to be very carefully performed; "spongy" flats are the cause of many ills in carding, and too tight mounting

disturbs the angle of the wire teeth.

3. Card Roller Mounting: The clothing of rollers and clearers is quite as important as the clothing of cylinders and doffers. Being of small diameter, these are mounted in a specially built frame, which is used in

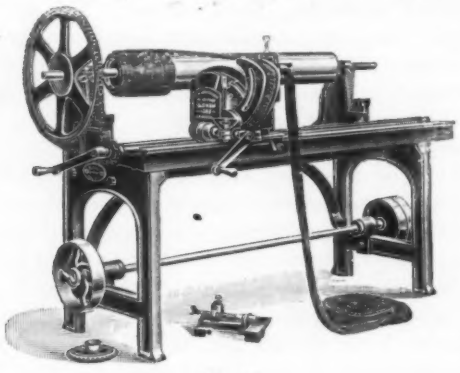


FIG. 19.

connection with the slide and tension head of the card mounting machine already described. Fig. 19 illustrates the card roller lapping frame; the frame is also adapted for turning up wood rollers previous to clothing.

The roller is mounted in the upper steps as shown; the card mounting slide with tension head is fixed on the framing, and motion is given to the roller through the chain gearing by turning the handle. The chain wheel determines the traversing speed of the tension head according to the width of filleting, each width demanding a wheel to suit. Thus a fillet 1 1/2 inches wide would require a wheel to give a traverse of 1 1/2 inches for one revolution of the roller; and so on.

The tension recommended for roller filleting is as follows: One inch wide, 120 lbs.; 1 1/2 inches wide, 160 lbs. It may be observed here that practically all the tension necessary may be secured by the drum brake causing "back tension" already described, thus leaving the teeth undisturbed. When the frame is being used for turning up wood rollers, it will be necessary to replace the tension head by the turning rest and tool. The roller is mounted in the lower steps and revolved by the driving pulley of the under shaft shown in the illustration. This frame is useful also for mounting card fillets upon stripping, burnishing, and raising rollers, the filleting being more regularly wrapped and much time and trouble saved thereby.

THE GRINDING OF CARDS UNDER WORKING CONDITIONS.

1. Cylinders and Doffers: The machines and appliances adopted in the grinding of cylinders and doffers have from time to time been improved, until at the present day they have attained to a high standard of excellence. The grinding instruments have been many and various, and we have to go back many years to the time when the only one generally in use was the emery covered hand strickle, cloth or wood, as the case may be. Then followed the long, full bodied grinding roller, made up of tin sheets, and, as often as not, used without a traverse motion. This roller, although serving the purpose of grinding uneven cylinders quickly, was naturally not at all popular with the carders of that day; the point produced was not of the desired type; it was more of a chisel-edge and resource to the hand strickle was necessary after roller grinding to produce the desired carding point.

Following on this came the self acting strickle grinder, which was constructed to grind the cylinder and doffer simultaneously. This grinder was in the form of a double way screw, on which was mounted a saddle carrying two frames, on which were fastened cloth strickles, one for the cylinder and one for the doffer. The great drawback to this type of grinder was its inability to grind true, owing to the rise and fall of the strickles in their passage across the surface of the teeth, and also on account of the flexibility of the cloth upon which the emery was fixed. Another drawback of the self acting strickle grinder was the inability of the strickles to pass over the edges of the cylinders, thus leaving high ends, which had to be subsequently treated by hand grinding. Nevertheless, the point produced by this grinder was as perfect as it is possible to procure by surface grinding even today, and we have to thank this primitive method of mechanical strickling, inasmuch as it was the forerunner of the traversing emery wheel grinder now in use.

Where revolving flat cards are in use at the present day, and we might also include many roller cards, strickles, hand or mechanical, are not tolerated. Hand strickling is a laborious task, and also a most unhealthy occupation; to stand over cylinders and doffers for hours breathing the fine dust caused by grinding, as well as that released from the foundation of the card clothing through vibration, has been the means of ruining the constitution of many otherwise

FIG. 20.

healthy and robust men. Strickles are now practically relegated to such a degree that where, say, 20 years ago, thousands were used, today there are barely hundreds.

Fig. 20 represents the type of grinder in universal use for cylinders and doffers, the patent emery wheel grinder with differential motion. This grinder is composed of a steel tube three inches in diameter, through which runs a double-way screw from end to end. In one end of the tube is fitted a hardened steel shaft, and in the other end is fitted a hardened steel socket, through which the screw shaft projects; this socket is of the same diameter as the fast end at the other extremity of the tube, and these run in the card bearings. On the tube is mounted the emery covered grinding disc, usually 3 1/2 inches wide; this being put into relation with the thread of the screw by the guide fork which passes through the slot in the tube, is caused to traverse from end to end, automatically reversing at the ends.

The differential motion is the means adopted whereby the rotation is transferred from the tube, which is rotated by the pulley to the screw at a reduced speed. The traversing speed of the wheel is caused by the difference in the speeds of the tube and the screw; thus, by varying the gears of the differential motion, it is possible to give almost any desired speed. A favorite speed, and one which we recommend, is that given by the motion usually supplied, which gives three traverses per minute across a 45-inch cylinder, the emery wheel running at 700 revolutions per minute.

Without the differential motion an extra pulley is required to drive the screw, thus necessitating two bands to drive the grinder —a cumbersome and unsatisfactory arrangement. Once fixed, there is no necessity to detach the motion in passing the grinder from card to card; but when it is required to remove same for any purpose, it may be detached in a few seconds.

The grinder, complete as illustrated, has not always been so improved. The following detail may serve to illustrate the various improvements we have added from time to time: oil pads, to prevent oil dropping on to the card; the socket end, to allow of a hardened shaft to run in the neck and obviate the wearing of the screw shaft and tube end; increase of tube diameter from 2 1/4 inches to 3 inches to obviate deflection; patent spring guide fork, Fig. 21, to force the fork to run in the bottom of the screw thread, prevent-

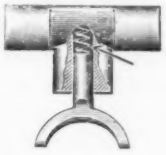


FIG. 21.

ing the fork from cutting away the screw thread edges, ensuring positive traverse and reducing wear and tear of both fork and screw; adaptation of emery wheel for covering with emery filleting; and lastly, the fine balancing of the complete grinder, to enable it to run at high speeds.

The question is often asked, "Why is the emery wheel grinder the best card grinder?" It has long been established as the universal system of grinding cylinders and doffers, not only on account of its superiority as a true grinder, but also for its point grinding properties. We will attempt here to answer this question. To invite comparison let us first consider the full-bodied grinding roller and its action. The long roller, of which the barrel is covered with emery from end to end, may be true at the commencement when perfectly new, or newly covered, but a very little thought makes it evident that the emery covered surface, however true, cannot

long remain so, as it must of necessity wear in proportion to the unevenness of wire with which it comes into contact, and this wear becomes evident before the emery surface is worn out and requires replacing. Thus, after a little while, the obective parallel grinding becomes an impossibility. Take, for example, the effect that would be produced by the grinding of cylinders with high ends—a frequent occurrence; the emery surface would be unduly worn at the ends, and the subsequent action of this roller upon a cylinder with a fairly true urface would result in hollow grinding. Thus it is evident that perfectly true grinding with the long grinding roller is impracticable.

The emery wheel grinder is so constructed that the tube upon which the emery wheel or disc slides is positively true from end to end, and the emery wheel, sliding upon this, must of necessity leave a true line as the result of grinding contact. The same surface of emery passes over every card tooth, whereas in the case of the long grinding roller the emery surface of one part of the roller comes only into contact with that portion of card teeth with which it is contiguous; for example, the central portion of emery grinds only the central portion of card teeth, and never the ends. Thus the emery wheel grinder may be set until the high parts are ground away and the surface of card teeth left quite parallel, a prototype of the grinder tube upon which the emery wheel travels.

In the case of many roller cards and a few types of revolving flat cards, the emery wheel is prevented from passing over the edges of the cylinders owing to the fact that the bends are fitted almost close up to the same. In cases of this kind, high ends are obviated by manipulating in the manufacture of the grinder, the reversing ends of the screw thread and the block which carries the traversing guide fork by this means causing the emery wheel to "dwell" a little at each end, and thus compensating for the loss in grinding which the end portions of the cylinders would otherwise sustain by the inability of the wheel to pass off the card teeth.

So much for parallel grinding. Now let us consider the question of "point." The long grinding roller is now rarely, if ever, used without the traversing motion; the motion assists in pointing the card teeth in the desired manner, but the emery wheel certainly has a better effect in this direction. The action of the wheel in traversing from end to end of the tube acts practically upon each side of the card teeth in turn, pushing the teeth and slightly deflecting them first on one side and then on the other, according to the direction of traverse, leaving the wire to regain its original upright position, all the while grinding from back to front of the teeth in course of revolution; thus is formed a sort of triangular point extremely sharp at its extremity.

(To be continued.)

PLAN OF A CARDED WOOLEN MILL.

From Uhlands Technische Rundschau.

The accompanying drawings show the constructions of a carded woolen mill recently enlarged by Weiss & Hannak, Bruenn, Austria. The building is 132 feet long and 59 feet wide. The new part, Fig. 5, is a continuation of the old mill, G, the two being separated by a fire wall. The stairway is in a tower separate from the building and is arranged so that fire cannot pass from the mill to the tower. The outside walls are stone and the concrete construction is used for both the roof and the supporting pillars. The latter are octagonal and are shown in Figs. 9 and 10. Fig. 7 shows the construction of the pillars. At the bottom are eight cross bars, f, 5/8 inch thick; lying on these at right angles are the same number of bars, e. On these are placed eight iron rods, c, 1 inch diameter and on the ring plate, d, are placed vertical rods 1 2/8 inches in diameter on the supporting pillars. These vertical pieces are held in a ring, b, Fig. 8, at regular distances from each other. The distances between the post are 14 feet 9 inches lengthways and 29 feet crossways of the mill. As shown at Figs. 9 and 10, the posts pass direct into the girders which support the cement roof. The windows are so arranged as to give plenty of light in all parts of the mill. The windows are 6 feet 6 inches wide and 7 feet 10 inches high.

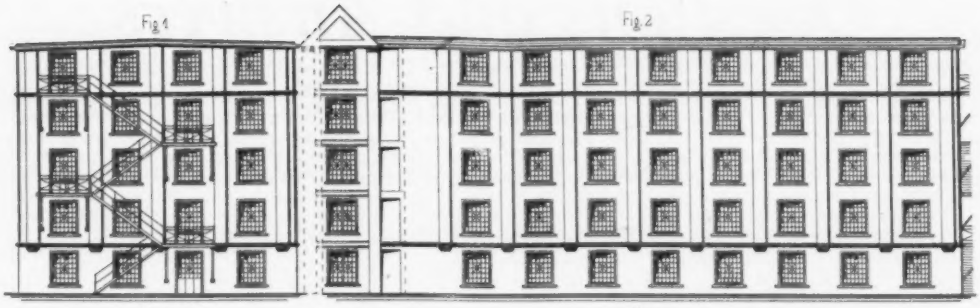


Fig 1
Fig 2

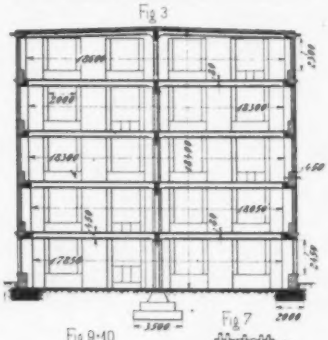


Fig 3

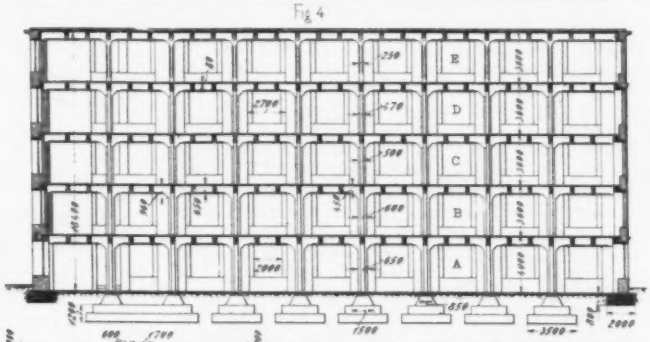


Fig 4
E
D
C
B
A

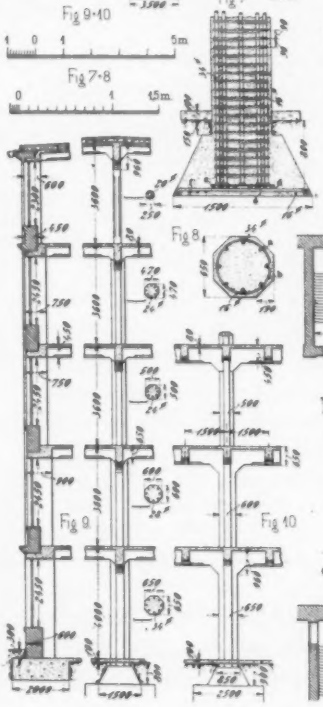


Fig 9-10
Fig 7-8
Fig 7
Fig 8
Fig 9
Fig 10

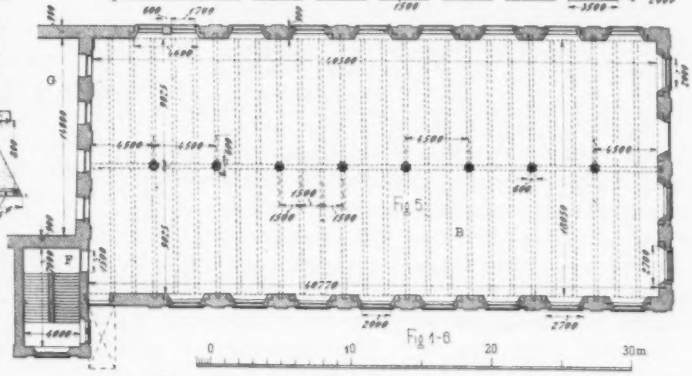


Fig 5
Fig 1-6
G
F
B

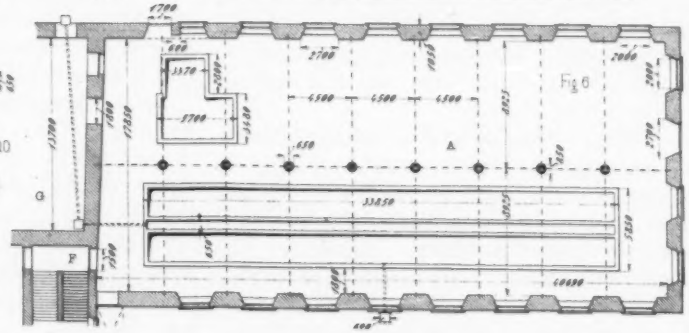


Fig 6
G
F
A

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

Proceeds of Sales.

Editor Textile World Record:

Kindly state the proper way to arrive at the amount due to a manufacturer from a commission house, where the following agreement exists: The manufacturer allows the commission merchant 6 per cent. as a trade discount with customer, settled in ten days, and 7 1/2 per cent. as commission, guarantee of accounts, storage of goods, insurance, etc., and further agrees to allow 6 per cent. per annum for all dating given on sales, using the following as an example of a transaction:

Sold a bill of goods on January 15 at four months' terms of $1,000 upon receipt of bill. The customer agrees to settle the account in ten days, or on January 25. Now under the agreement what would be the proper way to proceed to arrive at the amount the customer had to pay the commission house, and what would be the amount the commission house would owe the manufacturer?

Phoenix (1175).

The statement herein, as to the terms allowed, is not very clear. As I read it, it would appear that the customer is always entitled to a discount of 6 per cent. for settlement in 10 days, and to a further discount at the rate of 6 per cent. per annum for any additional dating given.

If this is the case in the instance before us it would mean that in 10 days the customer would pay his bill, deducting 6 per cent., and from the remainder he would deduct 4 months' interest—less the 10 days that go with the 6 per cent.—at the rate of 6 per cent. per annum.

Should the terms be what is usually known as 6 per cent. 10 days, 4 months extra, it would permit the customer to deduct, at the end of 10 days, 6 per cent., and 4 months' interest from the remainder.

If, however, the terms are a special arrangement of the 4 months stated in the inquiry, with no 6 per cent. provision, then at the end of 10 days the customer would deduct 4 months'—less 10 days'—interest, at 6 per cent. per annum.

The 4 months may be figured as of 30 days each, which is the customary method, or as one-third of a year—equal to 121 days, or, by the calendar from Jan. 15 to May 15—also 120 days. Let us take the latter figure.

In the first case the customer takes 6 per cent. of the $1,000 on Jan. 25, leaving $940, and from this he deducts 110 days' interest, which by the usual 6 per cent. method, figures $17.23, leaving a net payment of $922.77.

In the second instance the customer would take off 6 per cent., leaving $940 as before, and a further amount of 2 per cent. for the 4 months' dating, being $18.80, leaving the net amount $921.20.

Payment in the third case would entitle the buyer on Jan. 25 to deduct from the $1,000 just the 4 months'—less 10 days'—time, equal to 110 days, at 6 per cent., or $18.33, leaving $981.67 to pay.

The commission house is now entitled to 7 1/2 per cent., which of course is, or should be, figured on the net amount received after the cash discount and the discount for time is deducted.

In the first instance the 7 1/2 per cent. on $922.77 would be $69.11. Thus, from this $1,000 the buyer would take $77.23, the agent $69.11, and the manufacturer would get $853.66.

In the second case 7 1/2 per cent. on $921.20 is $69.09, and here the division is, buyer $78.80, agent $69.09, and manufacturer $852.11.

In the third example 7 1/2 per cent. on

$981.67 is $73.63, and so the buyer gets $18.33, the agent $73.63, and the manufacturer $908.04.

As in all such matters the selling agent is generally the principal, so far as the customer goes, and as the bills are paid to him and the manufacturer has no access to his books, the commission agent very likely reports sales—or cashes them—upon whatever basis of payment the custom warrants, and which would allow him the greatest advantage, no matter if he has availed himself of it or not.

The selling agent also has a habit of extorting some ten or fifteen days' extra time on the plea that it takes him that long to collect the money, which is by no means the case. He has, however, no right to any such allowance. As he sells the goods, he passes on the customer's credit, he collects the bills, and if bills are due in New York on a certain day, and in New York funds, it is his business to see that they are paid when due, and not the manufacturer's, who has nothing to do with it.

James Chittick.

Sizes of Silk and Cotton Threads.

Editor Textile World Record:

Have you any table that shows the comparative sizes in English count of silk and cotton threads, as 20/2, 30/2, 40/2, etc. We have a great many calls for this information in our business and would like to get it. Butler (1174).

The count of spun silk is based on 840 yards per pound, as is the English cotton count. In the case of ply yarn, however, the number of spun silk indicates the resulting count of the twist thread. For example, the expression 20/2 as applied to spun silk indicates that the 2-ply thread is equal to a 20s yarn. In other words, the 2-ply yarn is made by twisting two single threads of 40s together. In the case of cotton yarn, however, the count indicates the size of the single strand in the ply yarn. For example, 2/40s as applied to cotton yarn means that two threads of single 40s cotton yarn have been twisted together and that the resulting 2-ply thread is equivalent to a 20s single. We publish a pamphlet called "The Simplex Tables," which gives the comparative counts by the run cotton, woolen, worsted, linen, metric, yards per pound, and various grain systems which "Butler" may find useful. The price is 50 cents.

Spindles for Yarn.

Editor Textile World Record:

Please advise how many spindles it would require to spin 1,500,000 pounds of yarn per year, figuring 300 operating days of nine hours each, the yarn to be of the following counts:

Pounds.	Yarn.
20,000	combed peeler 10/1
800,000	combed peeler 11/1
25,000	combed peeler 14/1
75,000	combed peeler 20/1
30,000	combed peeler 24/1
500,000	carded peeler 11/1
20,000	carded peeler 20/1

How much per spindle would it cost to equip with the necessary machinery a mule spinning mill to spin this yarn from 10 to 30 single in carded and combed peeler. Spinner (1172).

For a cotton yarn mill to spin 1,500,000 pounds of various numbers of yarn per year as enumerated below from ten to twenty single in carded and combed peeler, and to be spun on mules, figuring as a basis 300 operating days of 9 hours each, or 54 hours per week.

Pounds.	Yarn.	Assumed Averages.
20,000	10 combed peeler	
800,000	11 " "	= 820,000 lbs. No. 11 combed peeler
25,000	14 " "	
75,000	20 " "	
30,000	24 " "	= 130,000 lbs. No. 20 combed pealer
500,000	11 carded "	= 520,000 lbs. No. 11 carded peeler
20,000	20 " "	

Summary—1,340,000 average No. 11 yarn. 130,000 average No 20 yarn.

Three hundred days divided into 1,340,000 pounds equals 4,466 pounds per day of 11s, which is equal to 26,796 pounds per week of 54 hours. Three hundred days divided into

130,000 pounds equals 433 pounds per day of 20s, equal to 2,598 pounds per week of 54 hours.

The mule spindle production of 11s on 64-inch stretch, 1 3/4-inch gauge at 54 hours, is 3.03 pounds per week, and of 20s yarn on 64-inch stretch, 1 3/4-inch gauge, at 54 hours is 1.8 pounds per week, or .338 pounds per day for 11s and .2 pounds per day for 20s.

Dividing 4,466 pounds by .338 gives 13,213 mule spindles on 11s. Dividing 433 pounds by .2 gives 2,165 mule spindles on 20s. Total, 15,378 spindles.

Organization and Roving Production.

11s yarn:	Bobbin
.50 hank roving = 19.8 lbs. in 9 hours	12 × 8
1.39 hank roving = 7.8 lbs. in 9 hours	8 × 4
20s yarn:	
.50 hank roving = 21 lbs. in 9 hours	12 × 6
1.00 hank roving = 10 lbs. in 9 hours	10 × 5
3.00 hank roving = 2.7 lbs. in 9 hours	7 × 3½

Schedule of Product:

27,000 lbs. per week of avg. 11s yarn.
2,600 lbs. per week of avg. 20s yarn.

29,600 lbs. total product.
8/13 of 11s to be combed peeler and 5/13 carded peeler.
All of 20s to be combed peeler.

Picking Department:—Basis, 10,000 lbs. per week of 60 hours, or 9,000 lbs. at 54 hours.

Four 36-inch openers and cleaning trunk.
Four 40-inch one-beater breaker.
Four 40-inch one-beater intermediate.
Four 40-inch one-beater finisher.
Each set at 8,500 lbs. equals 34,000 lbs.
About 15 per cent. has been added to the total yarn production for waste.

Carding Department:—Basis, 900 lbs. of carded yarn in 60 hours, or 810 lbs. for 54 hours.

Forty-five 40-inch revolving flat cards, allowing three stopped for grinding, leaves 42 cards at 810 lbs. each, 32,560 lbs. at the cards.
Here the carded sliver divides, part going to drawing and part going to sliver lap machines for combing.
5/13 of 29,600 lbs. gives 11,400 lbs. to be carded.
8/13 of 29,600 lbs. gives 19,500 lbs. to be combed.
Adding to this 2,625 lbs. of 20s yarn gives a total of 22,125 lbs. to be combed.
10 del. 1st drawing at
1,200 lbs. per week = 12,000 lbs.
10 del. 2d drawing at
1,200 lbs. per week = 12,000 lbs.

10 per cent. allowed for waste. Carded only.

6 sliver lap machines at
4,000 lbs. per week = 24,000 lbs.
6 ribbon lap machines at
4,000 lbs. per week = 24,000 lbs.
36 combers at 12 lbs. per hour
(648 lbs. 54 hours) = 23,328 lbs.

Allowing about 20 per cent. for waste.

20 del. 1st drawing at
1,200 lbs. per week = 24,000 lbs.
20 del. 2d drawing at
1,200 lbs. per week = 24,000 lbs.

Allowing 10 per cent. for waste.

4 slubbers 12 x 6, 60 spindles =
240 spindles at 126 lbs. = 30,240.
1 intermediate 10 by 5, 60 spindles =
60 spindles at 55 lbs. = 3,300.
4 roving frames 8 by 4, 144 spindles =
576 spindles at 16.2 lbs. = 3,110.
2 roving frames 7 by 3½, 96 spindles =
192 spindles at 47.4 lbs. = 27,200.

Sufficient allowance for waste.

Spinning Department.

14 mules, 1,130 spindles,
1¼ in. ga., or 15,820 spindles.
9 reels, 50 spindles each, 2 in. ring, or 450 spindles.

Approximate Cost.

The total approximate cost of a yarn mill equipped on this basis at prevailing prices of cotton machinery would be about $15 per spindle for this small mill, and $2.50 per spindle for the combing department, or a total of $17.50 per spindle.

This would include mill buildings, full equipment of cotton machinery, fire protection, heating system and supplies, steam power and transmission.

This estimate is applicable to the erection of this mill at any of the cotton mill centers of New England. To be first class in its construction, machinery and engineering equipment.

Fred S. Hinds, Mill Engineer.

Spots on Cotton Yarn.

Editor Textile World Record:

I am enclosing sample of cotton cloth, caustic boiled, at 3 1/2 Tw., in a Jefferson pressure kier. Can you give me any information as to what causes the spots and the remedy for the same.

Schenectady (1170).

I find that the black spots on the sample submitted are due to the cloth coming in contact with iron in some form or other. The caustic converts the iron into another substance, thus leaving the stains black instead of red as in an ordinary iron mold. This is certainly the cause of the trouble, but where or how will have to be found out by "Schenectady." It is evident that there is iron exposed to the action of the caustic in the kier, and I would suggest that he give

the inside of the kier a thorough washing with a lime wash, completely covering all exposed parts of the iron with a good coating of lime. If this has no effect and the spots still appear, the trouble is evidently due to some other cause, but wherever it is it is caused by iron.

I am returning the sample with the spots removed, with the exception of a few which I left in so that the iron effects can be seen. It would be far better to have the trouble removed than to try and remove the spots after they have been produced, as the treatment is quite severe and apt to spoil the cotton. If the cause of the trouble cannot be located the goods could be subjected to a strong bath of hydrochloric acid, letting them age until the stain is completely removed before proceeding with the bleach. Care must be taken in subjecting the goods to this treatment. As soon as the stains have disappeared the cloth should be washed and freed from all acid. Alpha.

Burning of Wool.

Editor Textile World Record:

I have had a little discussion regarding the possibility of wool burning. My claim is that wool would not burn, that is, flame. The other party, who was mate of a ship loaded with wool from South America, said he went into the forehold and found a bale of wool way up in the eyes of the ship that was thoroughly wet from seas washing over the bows, that had burned or was burning and setting fire to the surrounding material. What I would like to know is, if the water, either salt or fresh (this of course was salt) could cause any chemical change whereby it would become saturated with salt or even fresh water? He claims it will burn so as to set fire to other material. The writer's claim is that it will not flame enough to set fire or burn itself without constant contact with fire, or being saturated with some chemical that makes it burnable, like being saturated with camphor, such as they use for rainproofing.

Maxwell (1173).

The claim that wool will not burn freely with a flame is correct. It is this property which distinguishes wool very sharply from cotton, flax and other vegetable fibers. Wool, however, will smoulder for a rather extended period of time if once set afire by contact with flame or if brought to a temperature at which an incipient fire may be started. Wool that was "thoroughly wet" with salt water would hardly be in a condition to catch fire. A bale of wool in the grease, however, in a dampened condition and kept in a warm space, might heat up sufficiently to smoulder and set fire to surrounding inflammable material. The cause of this heating up in the bale is due to the rapid oxidation of the greasy and oily matters on the wool induced by the moisture and air. The heat thus generated gradually accumulates by being confined in the bale and finally causes the temperature to become sufficiently elevated to carbonize the wool, and thus bring it to a smouldering condition. The water (either salt or fresh) does not in itself effect any chemical change in the wool, but merely facilitates the oxidation of the grease. Howell.

Changing a Mill from Two Piece to Union Suits.

Editor Textile World Record:

As the profits are so small on two-piece garments we are thinking of turning our attention to union suits, and are writing to ask if you can give us any information about the manufacture of these goods. Our help is trained on the two-piece garment and we desire to know in what respects, espacially in the finishing, the manufacture of union suits differs from that of the two-piece garments. Of course we know the two-piece garments are more bulky and thereby harder to handle, and on account of the length they will get on the floor and get soiled. There should be some way to avoid this. Malden (1169).

A fairly accurate estimate can be had by itemizing the different operations in finishing two-piece garments as compared with union suits. The seaming, covering and trimming are very nearly the same on a union suit as on a two-piece garment. There would be a saving, however, in the cost of trimming drawers on top and down the front and stitching the hem on the bottom of the shirt, while the cost of trimming the front of the union suit would be a little more than the present cost of trimming the front of the shirts.

Two-piece Garments: After seaming and covering, neck trimmed and stitched ready for finishers.

Shirts: Button stay stitched on, facing stitched on, collarette around neck stitched, covering neck piece, stitching hem on bottom, three buttonholes and three buttons.

Drawers: After seaming and covering and trimming ready for finishers. Stitching on drawer band, suspender straps and back straps, six buttonholes, four in front band and two in back strap, six buttons, four large and two small.

Finishing Union Suits: After seaming and covering, neck trimmed and stitched ready for finishers. Button stay stitched on, three times length of regular shirt, and facing three times length of regular shirt. The collarette around the neck and covering the neck piece is the same as on regular shirt. There are ten buttonholes and buttons necessary.

The heaviest cost in finishing two-piece garments is for the stitching on of the drawers band, so that the cost of finishing drawers runs from 15 to 25 cents a dozen, depending on whether they have inside or outside bands, the latter requiring more rows of stitching.

Comparing the finishing of union suits with that of a single piece shirt, the button stay and facing is three times as long, and that there are ten buttons and buttonholes, as against nine on both the two-piece garments. As a result the cost for sewing on buttons and making buttonholes will be slightly increased, as would also be the cost for buttons. While the button stay and facing on union suits are three times as long as on the regular two-piece garment, to offset this there is the saving of material used for drawers bands, suspender straps and the back stays used on drawers.

My opinion is that the cost of finishing, that is, for the operators, exclusive of cost of material, on union suits should not be more than double what is paid for one-piece shirts, which runs from 10 to 14 cents per dozen, according to the style of finish, thus making the cost of finishing union suits from 15 to 21 cents per dozen, against the combined cost of two-piece garments, which is 25 to 39 cents per dozen.

Owing to the length of the union suits and the possibility of their getting soiled by getting on the floor, this could be obviated in two ways. A small canvas bag is held open by means of a small round iron ring, and the bag attached to the sewing-machine table in front of or on the side of the operator so as to allow the lower part of the garment to drop or fall into this bag. The usual work benches which are used to lay the work on could be built up at front and sides so that the lower part of the garment would fall or drop into this bag, making it impossible for any part of the garment to come in contact with the floor. F. W. Herington.

Horse Power of a Waterfall.

Editor Textile World Record:

Please give the rule for estimating without instruments the flow of the water over a waterfall. Also give me the rule for estimating the number of horse power where the height of the fall and the flow of water are known, the latter having been found by the rule asked for above.

Maynard (1167).

Two things are necessary to be measured: first, the height of the fall, and second, the quantity of water flowing per unit of time. The height can be measured by anyone who could use a level and tape. If the dam is complete, this is comparatively easy. If the fall is a gradual one for some distance back, it is more difficult, but a little ingenuity would accomplish it.

To roughly measure the flow of the water, a place along the stream should be found where the banks are parallel, and where the depth is as nearly uniform as possible. The longer this stretch, the more accurate will be the determination. Its length should be measured carefully, and a rope stretched across the stream at each end. Some floats should be provided made of narrow strips of wood weighted at one end so that they will be submerged as much as possible and yet float clear of the bottom. These should be started in above the upper rope, and the time noted in passing between the two ropes. From this the velocity of the stream can be found, and thus reduced to feet per second.

The width of the stream should then be measured, and also its average depth. Multiplying together width, depth and velocity gives the cubic feet of water per second. Multiply this result by 62.4, the weight of a cubic foot of water, by the height of the fall in feet, and divide by 550. This will give the

horse power at 100 per cent. efficiency. The net power will be considerably less in proportion to the efficiency of the water wheel. The following is an example:

Horse power = (width × depth × velocity in ft. per second × 62.4 × height) ÷ 550.

Example:

Width of stream (average .....feet 20
Depth of stream (average) .....feet 4
Distance between ropes across stream .....feet 90
Time for float to traverse between ropes .....seconds 45
Height of fall .....feet 25

Velocity foot per second: 90 ÷ 45 = 2.

20 × 4 × 2 × 25 ÷ 550 = 453.8 h. p.

Assuming a water wheel efficiency of 80 per cent. the net power would be (453.8 × .80) = 363 h. p.

If there is a dam in place, it may be possible to install a weir. From the depth of the water over the crest of the weir the quantity can be computed. I take it, however, from the way the question is asked that the cruder method would suffice in this case. Engineer.

Shrinkage in Finishing.

Editor Textile World Record:

Please explain the calculations for shrinkage of wool cloth in finishing to bring to the finished goods a certain weight. For example, I am making a carded woolen cloth to match a sample received from our commission house. The sample weighs 14 ounces per yard. I would like to know how to calculate the loom weight and shrinkage in length for this finished weight.

Pourquoi Pas. (1165-.

It will be necessary for "Pourquoi Pas" first to determine the loss in weight during finishing. This varies with the stock and process of finishing. Let us suppose that this loss in weight will average 15 per cent. Then the woven weight and shrinkage in length are calculated as follows, assuming that the pieces average 45 yards long finished:

45 (yds.) × 14 (ozs.) = 630 ozs. finished.

630 (ozs.) ÷ .85 (100% — 15%) = 741 ozs. from loom.

The piece of cloth that yields 45 yards of 14 ounces of finished cloth must weigh 741 ounces from the loom. Now it is for the manufacturer to decide how this weight shall be obtained; whether by a light woven cloth which must be shrunk in length to give the finished weight required; or by a heavy woven cloth, with little or no shrinkage in length.

Let us suppose, for example, that the manufacturer desires to shrink the goods 10 per cent. in finishing. In such a case the piece to measure 45 yards must measure (45 ÷ .90) = 50 yards woven. A piece 50 yards long weighing 741 ounces would necessarily weigh (741 ÷ 50 14.8 ounces per yard, which is the woven weight required to give 14 ounces per yard finished, with a shrinkage of 10 per cent. in length.

If, however, the manufacturer wanted the cloth to shrink only 5 per cent. in length, it would be necessary to make the goods heavier from the loom, the calculation then being as follows:

45 (yds.) ÷ .95 (100% — 5%) = 47.4 yds. woven.

741 (ozs.) ÷ 47.4 (yds.) = 15.6 ozs. woven.

Old Press Papers.

Editor Textile World Record:

I have an accumulation of used press-papers, some broken and some brittled by use. Is there any market for this sort of stuff?

Finisher (1168).

Old press-papers can be used in packing pieces for shipment and will serve as an additional protection under the burlap. If this is too much like giving the stuff away, "Finisher" might try the shoe trade with them. Hundreds of tons are used in the Northampton (Eng.) industry for shoe stiffenings. In Bradford, press papers are bought from the finishing works, graded into four qualities and sold as described by dealers. If the boards are not shiny some lithographer might buy them. On the highly polished boards it is almost impossible to make bookcloth or coverpaper adhere, but those with a matt face are usable as bindings for pattern books. Otherwise the old papers will serve for fuel or command a low price from the junk dealer. Wessex.

Knitting Department

THE KNIT GOODS SITUATION.

Business on fall weight underwear continues to come forward in fair volume each week and manufacturers of several lines are sold up except for very late delivery. The continued cold weather throughout the month of February had the effect of cleaning up stock in the hands of jobbers and retailers and has caused the buyers to place orders liberally and somewhat earlier than usual. We learn of some jobbers who have taken more business during the first three months of this year than during the first six months of last. The demand for medium weight goods has grown very rapidly during the past two seasons and some very attractive numbers have been brought out, among which we might mention a men's garment being shown by the Wright Company made of fine light weight merino yarn on the interlock machinery, weighing about 8 pounds to the dozen. This produces a fabric alike on both sides, very soft and although the price is only $7.50 a dozen, it has the appearance and touch of much higher grade merchandise.

The High Rock Knitting Co. have taken up the manufacturing of ribbed goods, made on the interlock machine and will go into an advertising campaign to popularize their garments as they have their fleeced product. We mentioned in our last writing a lady's combination suit made by the Richelieu Knitting Co. which is meeting with a ready sale. This garment is produced in a plain stitch fabric and instead of being cut and sewed at the sides to give it shape, the waist part is made of a finer yarn about half the weight of that used in the body of the garment. They have a patent on the fabric and also on the machine on which the yarns are changed automatically. The garment has the appearance of very fine gauge tuck work; the waist is lighter in weight and thinner than the balance of the suit, but it fills the bill and will undoubtedly be a popular line.

The prices on ladies' ribbed goods remain the same as they were last month. Six pound peelers are being sold at $2.10 to $2.15 and 7 ib. at $2.30 to $2.35. These are the generally mentioned figures, although it is reported that one large manufacturer has taken some more orders recently at the old price, namely $2.00 with June 1 delivery.

One noticeable feature in the fall underwear orders being taken is the strong tendency toward union suits. Nearly every retail buyer is increasing the number of lines of combination suits in men's, women's and children's garments and are cutting out wherever possible on the number of lines of two-piece goods.

Considerable difficulty is being experienced in getting delivery of ladies' summer weight shaped goods, more particularly those made with a high neck and long sleeve. One jobber informed the writer that although he placed orders for this class of goods with four different manufacturers, he is unable to get deliveries in any volume from any of them. The writer has had occasion recently to make comparison on some shaped goods delivered by some Pennsylvania manufacturers and finds that there is a great deal of cause for complaint in the weight and quality of the goods delivered, but the jobber who bought them states that it is impossible to get any satisfaction from the manufacturer and he is forced to keep the goods or go without any. The change in the raw material conditions that has taken place since the orders were given makes it impossible to get any concessions on goods that are not entirely satisfactory.

HOSIERY.

It is believed by most interested parties that buyers placed orders for the present spring season nearly up to their entire season's requirements. The orders that were

placed last June and July were heavy and up to the present time very few duplicate orders have come along. Jobbers are very busy urging the deliveries of certain lines and the difficulty with the labor in Philadelphia is proving to be a very serious matter, especially on lines of full fashioned goods. There seems to be a diversity of opinion among the jobbers in regard to placing orders for cotton lines for fall; some of the more important factors have covered the season's requirements, apparently believing that no lower prices are to be had, but on the other hand a few very large operators are working on a hand to mouth basis and according to some selling agents have bought only enough to get together sample lines for their travelers. It is certain that stocks of heavy weight cotton goods are very small and that manufacturers are making no move to accumulate any of that class of goods; whether prices are to be lower or higher, there is sure to be considerable activity in order to take care of a certain amount of business that comes to these lines.

As to wool goods there does not seem to be any holding off in the matter of placing orders, as is observed in the cotton lines. The number of manufacturers of wool goods is quite limited and as a rule they have no difficulty in selling up their production and the increased cost of materials is met by a change in proportion rather than by a change in price. Manufacturers of fleece lined hosiery are showing a disposition to cut out of their line ribbed top goods. The claim is made that a great many seconds are produced in fleecing the tops and if sufficient business can be had on hem tops to take up their production, the ribs are eliminated. Reports from Chemnitz do not hold out any hope of lower prices on German lines. Egyptian cotton is said to be worth in Saxony double what it was a year ago. The crop will not be as large on account of the dams in the Nile not working as well as anticipated. It is also noted that up to the present time prices have been based largely on old contracts and that even with the drop in the price of Maco yarn of from 35 to 50 per cent., prices of the manufactured goods would be no lower and if yarn prices remain as now, advances must be made.

Colored hosiery is being taken very freely again this spring and it now begins to look as if there would be as large a business on colors this year as last. Tans are being taken freely and we learn of some buyers reinstating their orders for tans that were cancelled in December and January when their future was questioned. The heavy demand for silk hose is being felt in all sections, not so much in the lower priced goods, for the domestic manufacturers are supplying plenty of seamless lines that get to the retailers for $1.00 goods for women and 50 cent goods for men, but in the better grades in the fashioned goods to sell at $1.00 for men and $1.50 for women and upwards, in which a shortage exists.

SWEATERS.

As mentioned in our last review, the demand for sweaters has veen very great. There has been an increased production amounting to nearly 40 per cent., notwithstanding which a great many manufacturers are in a well sold up condition. As the orders taken from a great many retailers are added together, it is noted that about 50 per cent. of the call is for white coats for women, with about 20 per cent. each for grey and cardinal and the remaining 10 per cent. is divided between the novelties and sky, Alice, sage, reseda and old rose. Thirty-inch coats have been taken very largely and a goodly percentage to measure 27 to 28 inches. For early fall business many are running from 36 to 39 inches. As for stitches, there is some tendency away from the plain tuck or cardigan and a leaning toward neater fancy patterns. The increased demand for coat sweaters has had the effect of lessening the call for some other line of knit goods and those most effected are the infants' knit sack and ladies' squares, shawls and Newports.

One article of knit goods that does not change much from season to season is the knit skirts. J. B. Allen & Co. of Philadel-

phia show a wide range of this class of goods at from $3.75 to $15.00 a dozen in fancy stripes and plain colors. For the coming fall they are showing several styles with a wide crocheted flare or border in a shell stitch. This is something new and is quite likely to help the sale of this line of goods.

FULL FASHIONED KNITTING.

BY PAVONIA.

(Continued from February.)

Fig. 32 gives the position of the needles and sinkers and shows the relation of the thread and fabric at the beginning of a course of knitting. The thread is attached to the selvage of the fabric and when the

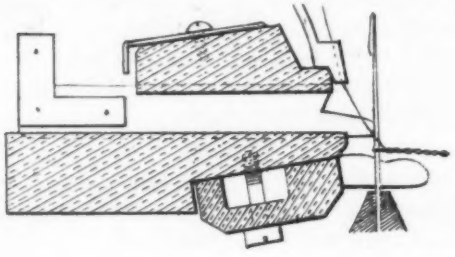


FIG. 32.

carrier moves, the thread is laid over the points of the sinkers. The first sinker that comes forward causes a formation shown in Fig. 33. The correct position of the thread at this point is very important because it is the construction on which the selvage is built. It is one of the many delicate adjustments which require the skill of an expert mechanic to obtain. The second and all subsequent sinkers form their loops as in Fig. 34 until the last one of the course.

Fig. 35 shows the form of the last stitch that is drawn, and it is the one to which the continuous end of the thread is attached. This is also a selvage stitch and it is this that misses the sinkers when the carriers rebound.

After all the loops are drawn, an important operation of which mention has not yet been made, takes place. In drawing the loops in a 39 gauge machine there are only 13 stitches per inch made. There are 26 sinkers per inch in the heads, but half of these are dividers and the remaining half are jack or loop-drawing sinkers. Therefore, in drawing, every other sinker being a jerk sinker, it is thrown forward by the action of the slur cock, while the dividing sinkers stay back and do not form their loops during the drawing motion.

These new sinkers are generally called "dividers," but they are really dividing sinkers. They are always operated in a body and on most German machines they never break contact with the catch-bar, the head of these sinkers never leaving the slot at any time, whether the catch-bar is in its high or low position. For this reason the heads of the dividers are longer or higher than the

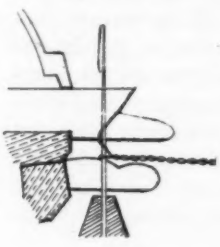


FIG. 33.

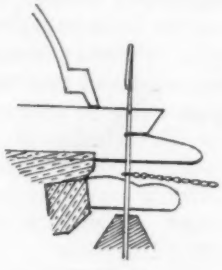


FIG. 34.

heads of the jack sinkers, as can be seen in Figs. 24 and 25.

The advantage of this dividing arrangement is as follows: If the striking-jacks were required to impel every sinker forward it would require 26 jacks per inch; this, with their partitions, would make them twice as delicate as they now are at 13 per inch, because they would have to be made twice as thin. By having a divider between each jack-sinker, the reenforced head of the sinker can be made almost twice as thick as it could be if the dividers were also jack sinkers. The striking surface of the sinker heads needs to be as wide as possible. The thinner the striking surface edge of either jack or jack-sinkers, the greater the liability of the jack to miss the sinker, in which case the result is generally a number of broken dividers. On the five gauges it would not be possible to run for any length of time at a high rate of speed with a jack for every sinker. This is amply proven by the in-

creased liability on the finest gauges where every second sinker only is a jack sinker.

The second advantage is shown in the superior quality of the fabric which is the result of this dividing process. In drawing the loops there is always a liability for them to form unevenly. Some may be small, others large, due to a great number of causes. The change of speed of a machine will sometimes cause some sinkers to draw larger loops than at other times. A slight tightness in any one or a number of sinkers, lumps, knots, accumulation of lint in the guides, in fact a hundred things may cause uneven loops.

By the dividing process, whatever variation there is, is reduced by just one-half. Suppose that the correct length of the loop drawn by the jack sinker is one-eighth of an inch. When the dividing sinkers come forward, they each take a half of that loop for themselves robbing the jack-sinker of one-sixteenth of an inch, or half its loop.

After the dividing, every sinker, both dividing and jack, has a loop and every needle has a stitch bent around it, whereas, before the dividers were brought forward, only each pair of needles possessed a stitch. A variation of 1/64th of an inch in any loop would be reduced to 1/128th of an inch after being divided and would cover two needles and sinkers instead of one. At the point where the dividing sinkers in coming forward have reached their limit, they form a perfect line with the jack-sinkers, and as soon as the line is formed, the catch-bar is lowered by the arrangement shown at Fig. 19, the groove then covering all the sinker heads and combining both jack and dividing sinkers into one solid working body.

The needles now begin a movement towards the sinkers, caused by the action of the cams, Fig. 12, and a pressure is exerted on the loops between the sinkers and needles. Any unevenness now existing in the loops is equalized in this manner by what is termed "dividing pressure." After a few degrees of motion, this pressure is somewhat relaxed by a slight backward movement of the catch-bar. The loops are now held moderately tight between the sinkers and needles, while the needles move downwards, following also the sinkers as they move backward, keeping this pressure on the loops. A backward interpressed motion of needles and sinkers continues until the presser is reached by the needles as shown in Figs. 36 and 37. Here the needles have moved downwards far enough to allow the recently formed loops to pass under the needle beards. Fig. 37 shows a dividing sinker with its loop corresponding with the jack-sinker loop in Fig. 36.

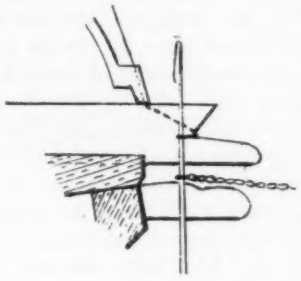


FIG. 35.

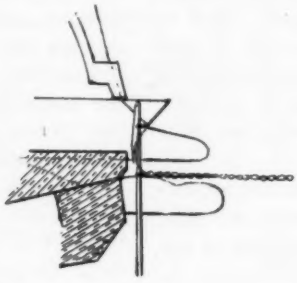


FIG. 36.

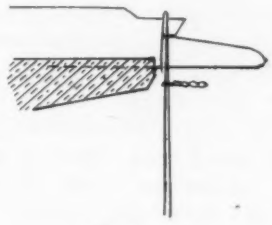


FIG. 37.

The height of the needles is now of great importance. At this point they are pressed against that part of the sinker-head called the "presser." The thread formation at the beginning of the course, Fig. 32, is the cause of a very close adjustment at this point, as the point of the needle beard must close between the fabric stitch and the yarn as it is bent around the needle. If the needles press too high the selvage needle will close above the bend of the thread and the selvage stitch will then be thrown off. If it should press too low, the tendency is to close be-

neath the fabric selvage stitch. The selvage stitch which is on the needle is generally drawn a little higher on the needle than any of the rest. This often causes the beard to close under the fabric loop instead of between the two. This drawing up of the selvage loop is caused by the forward draw of the first sinker, Fig. 33, the carrier-thread being connected to the fabric at that point. When the needle presses beneath the fabric selvage stitch, the previous loop is not cast off and consequently two stitches remain on the selvage needles, the one already on and the one in process of formation. This is called "double looping" and it was a very serious fault when real hand-seaming was in vogue, but with present methods of seaming, unless the double looping is very bad it is not condemned.

On all Cotton machines, there are adjustable sectors set in the cams, which are used to regulate the height of the needles at the point when they reach the presser to close the beards. These adjustable sectors are called "landing bits." The pressing of the needle-beards is caused by the cam shown at Fig. 12, this beard-closing point being the highest part and also the point from which the name "pressing-cam" has been derived.

On the old hand-knitting machines a separate attachment was used to close the needle beards, as is also the case today on even the Cotton rib machines. On all plain machines and in the one under consideration no extra attachment is required. When the point, Figs. 36 or 37, is reached in the downward movement of the needles, they are forced into contact with the sinker head. As the loops are still held tight between the needles and sinkers, it is necessary for the catch-bar to move backward still farther to allow the needles to press and close the beards.

After the needle beards are closed by contact with the presser they move downward until the point of the beards have pressed through the fabric, as shown in Fig. 38. The needles now leave the presser and move in direction opposite to the sinkers which continue backward. As soon as the needles are clear of the end of the sinkers, they take a downward plunge and draw the loops into what are called "Knocking over bits."

Fig. 39 is a front view of a few needles in the position shown. The side view is shown at Fig. 40. They show the loops after the needles have left the sinkers. The stitches at this point are left without any mechanical guidance and it is at this instant that the necessity for preparing the yarn becomes easy to explain. On most knitting machines, the loops are never released after they are formed until they are changed into fabric, but on this type of machine the loops are left entirely to the needles and depend for the maintenance of their equality solely on the pressure previously exerted on them during the dividing process. For this reason it becomes necessary, especially on yarns of a hard or wiry nature to moisten or soften them so that the tendency of the loops lose their form and run one into another is greatly reduced. The few round loops shown in Fig. 39 represent the stitches as they would appear at that point when drawn from dry yarn. These are liable to become undivided, some becoming larger and others correspondingly smaller. When this occurs, a peculiar pinhole effect is caused in the fabric. In knitting unprepared silk, this makes it impossible to produce a fabric of any value, its nature being such that in a dry condition the loops will not stay equally divided unless mechanically controlled. Not only will one loop run into the next, but in a great many instances the silk will straighten itself out in several needles and run into one big loop immediately after leaving the control of the sinkers at the point shown at Fig. 40.

In fact, the liability still continues until the point shown at Fig. 41 is reached. There are several contrivances, composed of different shaped sinkers, the object of which is to enable dry or unprepared yarn to be used, but the superior results after preparing the yarn before knitting are so pronounced and so far surpass any effort at knitting with unprepared yarn that we will not consider these attachments here.

The few stitches in Fig. 39 which run to a point represent practically what occurs to the loops after the yarn has been prepared, each needle holding the yarn in the position where the crease was made when the loop was first drawn. The top of the loop also maintains its crease as made by the sinkers during the dividing. These will not run into each other, the yarn forming an angle in each needle and at the apex of each loop. Many manufacturers who are operating both seamless and full fashioned machinery are changed into cloth, but still remaining on the needles. The fabric is prevented from rising with the needles by the under surface edge of the sinkers, the sinkers having moved forward during the knocking-over motion.

The forward movement of the sinkers at this time has three special points of importance: The first, Fig. 43, is an adjustment for the purpose of guiding the selvage threads into position, working in connection with the needles in preparing the thread so

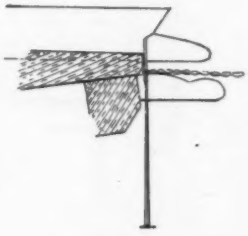


FIG. 38.

FIG. 39.

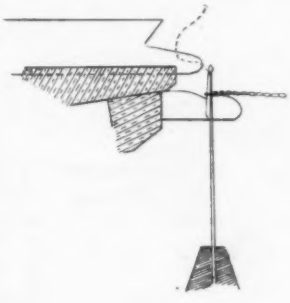


FIG. 40.

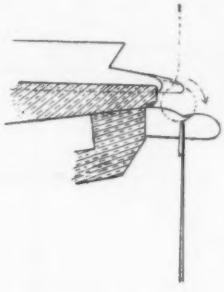


FIG. 41.

curious to know why lisle and mercerized yarns that will knit well in the dry state on the seamless latch needle and also most spring needle machines will not knit a good fabric on full fashioned machinery of the Cotton type. Some argue that it is a freak notion of the knitters or an improper adjustment of the machine that causes such a requirement. A study of Figs. 39 and 40 will show how impossible it is to knit any yarn of a springy nature without first rendering it pliable by some process of dampening, oiling or paraffining.

A knocking-over bit is shown in Fig. 30, and its position relative to the other working parts can be plainly seen in Fig. 20. In Fig. 40 the downward path of the needles is marked by the dotted line. It will be seen by Figs. 41 and 42 that the loops are drawn through the fabric above the knocking-over-bits, and that the fabric is held back while the needles make the forward under curve movement which results in their being able to rise clear of the previously knitted course, and with the last row of stitches or loops that it may fall between the selvage needle and the first beyond the selvage. The second adjustment is where the needles, in rising from the knocking-over bits enter between the sinkers, bringing the fabric in contact with their under surface. The third point is where the needles, in rising take the prepared selvage thread from the sinker, Fig. 44, after which the sinkers move backward again, but not too far back to fail to allow the fabric to make contact with their under surface during the needles' entire upward movement until the point shown at Fig. 32 is again reached.

It is not possible for the fabric to rise higher than beneath the sinkers at any time, even when the needles are up; because at all times when the needles are in such position that their tops are higher than the under surface of the sinkers, the sinkers are forward and through the needles far enough to prevent the fabric from rising. Before the drawing of the course, the dividing sinkers only are forward through the needles, the shorter jack sinkers not reaching the needles

until they are impelled forward. The different lengths of the sinkers are adjusted especially for the benefit of the selvages at the point of motion shown in Fig. 43. On machines that widen or narrow by two needles it is possible to use these different sinkers, but where one needle fashionings are made, the sinkers are required to be all of one length.

A glance at Figs. 24 and 25 will show a difference in the shape other than the lengths. The two needle narrowings also allow this difference to be made and it is a wonderful help to the selvages, the advantages being found at the point, Fig. 44, where the sharp point of the selvage sinker must guide the thread into its place so that the proper needle will take it as it travels upward. This is one of the least positive points in the entire motion and requires a careful adjustment of the tensions at all times to insure any degree of perfect selvaging, the liability being (unless a perfect adjustment is maintained) for the thread to lap around an extra needle, causing an especially large loop to form, which in most cases will throw off the real selvage loop at the next course. On single needle widenings or narrowings this change could not be made, as all the sinkers would have to be made as shown at Fig. 24.

Referring again to the knocking-over motion, it will be seen that this motion is not what might be termed absolutely positive in its action. The knocking-over bits have no motion whatever, but the hollow into which the fabric is drawn by the needles at their extreme downward point, Figs. 41 and 42, and the shoulder over which the fabric cannot easily rise as the needles move forward, tend to throw the fabric behind the needles and leave them clear to rise through the knitted loops. Fig. 41 shows the path of the needles from the time they leave the presser till they assume their first position ready for another course. To assist this knocking-over motion, a tension roller device, to which a weight is attached, is connected to the fabric. By the aid of this simple arrangement a perfect knocking-over of the fabric is assured.

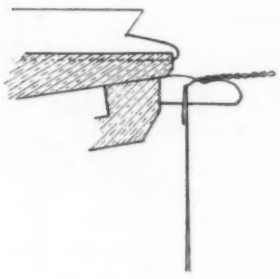


FIG. 42.

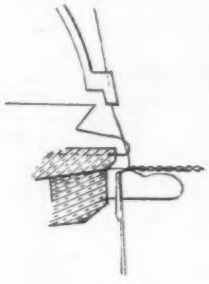


FIG. 43.

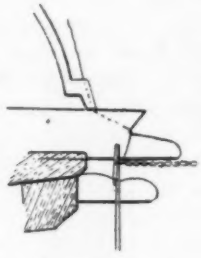


FIG. 44.

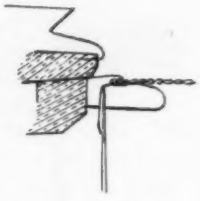


FIG. 45.

Machines are built with knocking-over bits, the action of which is practically the same as the knocking-over on a round frame. Fig. 45 gives an idea of this bit. This is a deviation from the Cotton plan, and while at first sight it seems as though it must be a splendid improvement, being positive in its action and requiring no tension weight to assist in performing its work, it has not gained the popularity which it seemed to deserve. By the use of this knocking-over bit about 35 degrees of motion of the cams is saved and converted into extra speed of the entire machine. This is done by the elimination of the forward motion of the sinkers, Fig. 44, the necessity for this action being transferred to the knocking-over bits.

(To be continued.)

There are at present about 7,000,000 spindles in France, compared with 5,500,000 in 1900, an increase of 27 per cent. in the nine years. The consumption of cotton during this period increased from 700,000 bales to 970,000 bales, or 39 per cent.

AN IMPROVED CIRCULAR KNITTING MACHINE.

A knitting machine for which a patent has been recently issued, has for its object to provide means by which the dial needles are shifted into the path of the cylinder needles to permit the latter to pass through the loops on the dial needles, which are then thrown out of action. This leaves the loops on the cylinder needles, which continue to operate independently of the dial needles and thus knit plain fabric in continuous relation with the ribbed fabric. This invention also comprehends an arrangement of the dial needles whereby the loops which are carried by the dial needles are distended to permit the cylinder needles to pass up through the loops, which permit the free withdrawal of the dial needles.

The invention comprises a series of cylinder needles, and a series of dial needles arranged to co-operate in knitting a ribbed fabric, means arranged to shift the dial needles into the path of the cylinder needles, and to shift the dial needles radially outward to stretch their loops beyond the cylinder needles so as to permit the latter to pass through them.

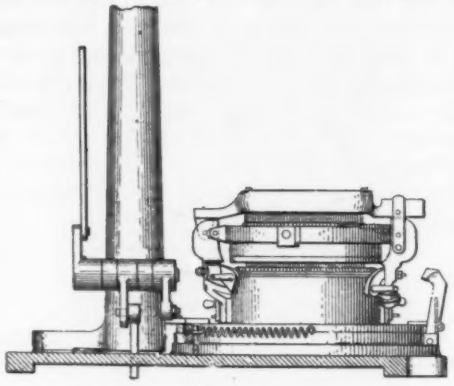


FIG. 1.

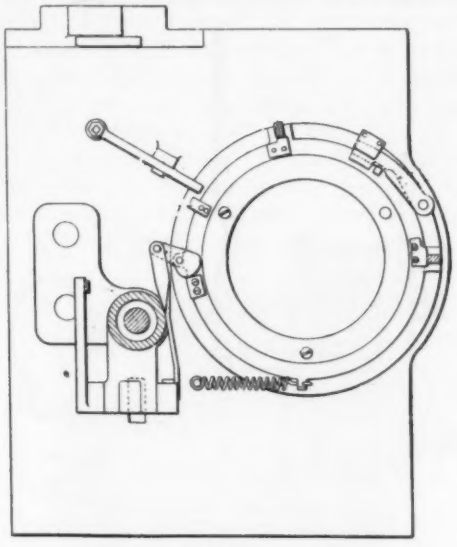


FIG. 2.

FIG. 3.

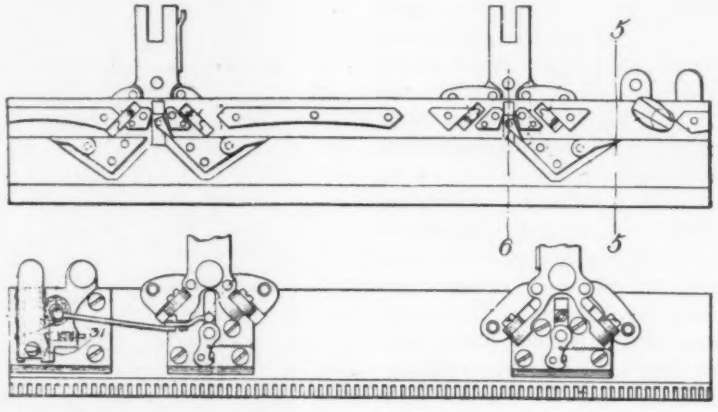


FIG. 4.

Fig. 1 is a front elevation of the machine; Fig. 2 is a sectional plan showing the arrangement of the dial cams; Fig. 3 shows the normal position of the dial and cylinder needles; Fig. 4 shows the position of the needles when transferring the loops; Fig. 5

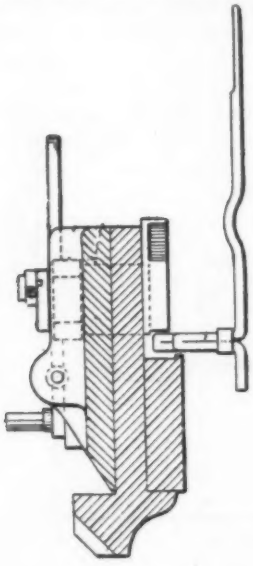


FIG. 5.

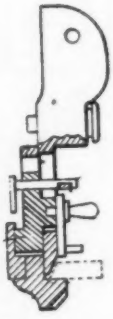


FIG. 6.

shows a dial and a cylinder needle transferring the loop; Fig. 6 shows the knit fabric.

The operation of the machine is as follows: The ribbed knitting is proceeded with until a predetermined length has been knit and drawn down in contact with the brush roller by the take up mechanism. When the required length of ribbed knitting has been formed, the pawl drops into engagement with the ratchet, which is rotated so as to engage its cam with the dial-plate shifting mechanism. The projection is also caused to engage with the lever arm to uplift the cam into the path of the cam arm, which controls the actuating mechanism of the cams. The shifting movement of the dial plate, with the dial needles still held in their extreme retracted position, brings the needles into their altered position with relation to the cylinder needles, so that when again protruded, they will lie in juxtaposition to their corresponding cylinder needle.

The protrusion of the cams throws the dial needles forward to their abnormal position of protrusion, which carries the loops into the path of the cylinder needles. The rapidity of the protrusion of the cams is such that commencing with the first needle, which is in contact with its cam surface and in continuous succession thereafter, all of the dial needles are protruded to a position of engagement. Continued rotation of the machine successively carries the dial needles out to their extreme position, which permits transfer, after which they are again retracted by the cam into inactive position before they approach the thread guide. In the meantime the dial stitch cam, which normally throws the dial needles out to take thread has been retracted, so that the dial needles are no longer advanced as they reach the thread guide, and therefore they perform no function in the knitting operation during the transfer operation.

KNITTING NECKTIES.

BY LARAMIE.

Knitted ties which are made on latch needle machines seem to be in demand more

FIG. 1.

than ever; in fact, manufacturers making these ties cannot purchase machines enough

to meet the demand and customers are constantly urging them to complete their orders. Some firms have had to resort to running day and night, a day of ten hours and a night of eleven hours, in order to fill the orders. Running day and night is bad for any machines, but there are not very many firms making these machines and the firms which are making them have orders far ahead.

Fig. 1 is what is known as a plain cross

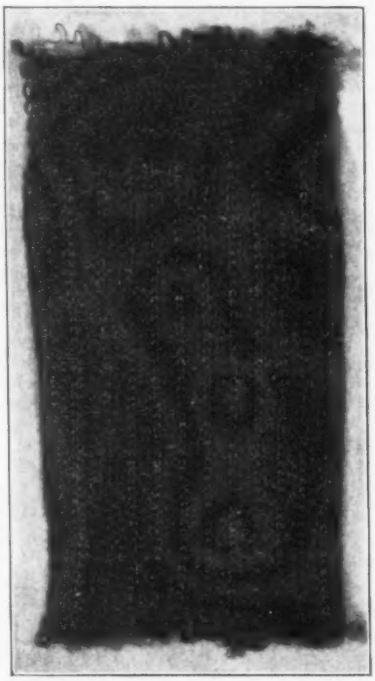


FIG. 2.

stripe tie made with the needles so arranged as to have a long latch needle alternate with a short latch needle. The long latch needles hold the stitches for a certain number of revolutions and after this is continued as many times as desired, in this case for three revolutions, the other colored silk, or what is known as the stripe, goes in and the long latch needles perform the same work as on the body silk.

Some very pretty effects are made on these cross stripe ties such as black and white, garnet and red, white and Copenhagen blue, etc. These tie machines are arranged so as to run two feeds if desired, but the same designs and effects cannot be made with two feeds as can be done on one feed. Wheels can be put on each feed to raise one needle so that it will hold the stitch, but the alternate needle will go down in a slot and cast off the stitch. These wheels are what might be called cut cast off wheels and are cut anyway desired, one and one, two and one, three and one, etc.

Fig. 2 is a vertical stripe tie made by using the two feeds. In one feed is used two threads of silk and one thread of about 2/16s mercerized cotton; in the other feed

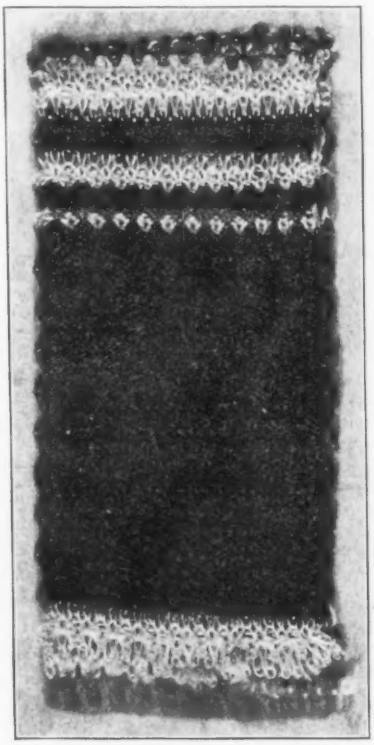


FIG. 3.

is used two threads of silk. The wheels are then put on, in this case using a one and one wheel. These wheels have to be put on so that when one needle on one feed does not cast off, this same needle on the second feed will go down in the slot on the wheel and cast off, the same needle holding the

stitch on one feed and casting off on the next feed continuously. When the desired length is made and the neck is being knit a cam on each feed comes into action which casts off every needle on both feeds.

Some very pretty effects can be made in this pattern, as the heavy cotton on one feed produces a ribbed effect such as is used so much in hosiery tops.

Fig. 3 is another stripe tie made on one feed and is like Fig. 1, with the exception of the stripe, which runs for one revolution. Then after three revolutions there is another stripe, which is three times as wide as the first one. After this stripe there is the body color for four revolutions, after which the stripe will again go in for five revolutions. The machine will then knit as for a plain knit tie for any desired length, after which the stripes are again made as described.

KNITTING MILL NEWS.

New Mills.

Georgia, Rome. A corporation has been organized under the name of the Cherokee Hosiery Mills with paid in capital of $30,000. A site has been purchased in the suburbs of Rome and work will be started at once on the erection of buildings to accommodate 150 hosiery machines, which will be put in operation as soon as the buildings can be completed. E. F. Shropshire will be president of the company and have charge of the financial end, while F. C. Bivings will be general manager. Mr. Bivings is now superintendent and manager of the Eagle Hosiery Mills of Dalton, Ga. 176 and 200-needle half hose will be manufactured. Mr. Bivings will attend to the buying and can be addressed at Dalton, Ga.

*Massachusetts, Methuen. Manufacturing has been started by the Jersey Knitting Co. As noted they secured some of the machinery of the Jersey Cloth Co., now out of business.

Massachusetts, Northampton. Ground has been broken for the Northampton Silk Co., and the building is to be completed the last of August. As noted, this company is controlled by the McCallum Hosiery Co. of Northampton. The new building will be located in Florence.

*Michigan, Chesaning. The Big Rock Knitting Co. has been incorporated with capital stock of $15,000 and has organized with the following officers: O. D. Chapman, president; F. A. Greenfelder, treasurer; F. J. Walser, manager and buyer. W. F. Hall will have charge of the knitting. They have started making men's, women's and misses' sweater coats, shawls and mufflers, operating by gas power and employing from 8 to 10 hands. The plant is located in the Fischer Building.

*New York, Fulton. Twenty-five thousand dollars has been raised locally to buy the building of the Freeman Boat Co., which will be turned over to the Progressive Knitting Co. This insures the location of a new mill in Fulton.

*North Carolina, Durham. It will be about May 1 before the Durham Textile Mills are ready to begin manufacturing.

North Carolina, Liberty. The Lee Hosiery Mfg. Co. has been incorporated with authorized capital stock of $50,000, and will begin business with $5,000 paid in. The incorporators are Wm. M. Hanner, G. A. Foster and J. D. Gregg.

*North Carolina, Sanford. W. A. Ellington of Chapel Hill, N. C., has purchased the knitting equipment of the Cross Hill Oil & Hosiery Mill and will remove it to Sanford. He has rented a building and is now installing 57 knitting machines, one sewing machine and electric power equipment for the manufacture of men's half hose. Mr. Ellington will be manager of the plant and attend to the buying. He will increase the equipment to 93 knitting machines, and estimates he will have invested about $7,000 and give employment to 40 hands. The mill will be known as the Effie Hosiery Mills.

*Oklahoma, Frederick. The Frederick Knitting Mill of Frederick, Okla., will be organized with capital stock of $100,000. As noted previously, J. W. Blackwelder of Hickory, N. C., heads this company. They are understood to have in preparation plans for a mill.

*Pennsylvania, Martins Creek. Construction work has been started on the buildings for the Clarke Knitting Co., successors to the Pearson Knitting Mills, South Bethlehem. The main building will be 30 by 70 ft., 2 stories high. Walter H. Clarke of Bethlehem heads this company and expects to have the mill in operation early in April.

Pennsylvania, Philadelphia. The Ideal Knitting Mills have been started up by Max Cohen at 16 South 3d St., where he is manufacturing sweater coats on 8 knitters and 9 sewing machines, using electricity as the motive power. He uses 2/20 wool and worsted yarns and sells direct.

Pennsylvania, Philadelphia. It is reported that charter has been asked for the Easton Knitting Mills Co., with a capital of $10,000. The company, whose machinery is now located in Reading, will be installed in a new building to be erected at Scranton, Pa., which is to be ready for occupancy about May 1 next.

Pennsylvania, Philadelphia. The Regal Knitting Company have leased a portion of the first floor in the Peerless Building on Willard St., east of Kensington Ave., in which they are installing 20 knitters, 5 ribbers and 3 loopers, which they will operate on high grade seamless half hose for men and sell the production direct.

Pennsylvania, Philadelphia. The Union Knitting Mills of Pennsylvania, with a capital of $10,000, David Frankil, president, M. Herzberg, treasurer, and N. Binder, superintendent and buyer, are equipping one of the upper floors at 17 South 4th St. with 18 knitters and 10 sewing machines, which they will operate by electric power on sweater coats, using woolen, worsted and cotton yarns, and selling the production direct.

*Pennsylvania, Reading. Application has been made for a charter for the Edwin C. Ruby Co. with capital stock of $9,000. Edwin C. Ruby will be president; C. F. Schultz, treasurer, superintendent and buyer. They will shortly finish extensive experiments on "Save Hose," the article they are to manufacture, which is to prevent hose supporters from tearing ladies' stockings. 2/60s and 2/30s silk yarns and 2/50s and single 60s lisle yarns will be bought.

South Carolina, Chester. A $25,000 company to build a hosiery mill at this place will be organized by F. M. Boyd, Chester, and B. B. Reid of Newberry, S. C. They intend to install 100 knitting machines, electric power equipment, and to equip a dyeing and finishing department. Mr. Boyd will be president and manager.

North Carolina, Elizabeth City. M. N. Sawyer, a member of the Board of Aldermen, has made favorable terms, with parties interested in establishing a hosiery mill here, for some of his property.

North Carolina, Marshville. Stock is being subscribed for a hosiery mill here and although no definite arrangements have been made the outlook is bright for the establishment of a mill in the near future. Dr. M. P. Blair is the promoter.

Ohio, Cleveland. The Green-Haas-Schwartz Co., successors to the S. Schlessinger Knitting Co., have organized with Meyer Jaskulek, president; I. H. Green, treasurer, and J. C. Sampliner, buyer.

Pennsylvania, Blandon. Seidel Bros. of the Maidencreek Hosiery Co., Temple, Pa., will, it is reported, locate a branch plant at Blandon, giving employment to about 30 hands.

Pennsylvania, Harrisburg. J. W. Kline of the State Library has bought a building in a small village in this vicinity and raised $8,000 toward establishing a hosiery mill. He is interested in equipment and information relating to the manufacture of various kinds of hosiery.

Pennsylvania, Meadville. R. K. Hammond, 496 Arch St., is interested in hosiery knitting machines.

Pennsylvania, New Berlin. Concessions have been made in the form of exemption from taxation and cash bonus to a company which is expected to locate a hosiery mill here, the plant to be completed and in operation in five months. The promoters of the enterprise are from Lansford.

Pennsylvania, Philadelphia. A report, which cannot be verified, has it that several manufacturers of textile fabrics in Frankford are about to form a corporation for the manufacture of full fashioned hosiery in that section of the city.

Pennsylvania, Philadelphia. The real estate of the Branson Machine Co. in bankruptcy, consisting of the property 504-8 North American St., will be sold at public auction on April 6, by the referee in bankruptcy. A meeting of the creditors will be held on April 7 to hear the returns of the sale and confirm it.

Pennsylvania, Reading. The Crescent Hosiery Mills have been incorporated with capital stock of $50,000 and leased the entire plant of the Pennsylvania Knitting Mills Co. of Reading. The new company is making men's and women's silk, mercerized and cotton hosiery on 300 knitting machines and 78 sewing machines, giving employment to 300 hands. Henry Rech is president of the new company, Max H. Shultze of New York is treasurer, and Thos. F. Young is superintendent. These men were all connected with the Pennsylvania Knitting Mills Co. Mr. Rech will attend to the buying. Harry T. Stuart of New York is vice-president, and will sell the product.

*Texas, Wichita Falls. The matter of the location here of a hosiery mill has not developed sufficiently to enable a report to be made. In fact the Chamber of Commerce has merely been negotiating with a manufacturer of Hickory, N. C., for the location of such a plant here.

Rhode Island, Thornton. It has been rumored that the plant of the British Hosiery Co. would not be moved to Providence the plans for this change having been changed by the owners, Geo. E. Boyden & Son of Providence. This is incorrect, as their original plan to move the British Hosiery Co. to Providence will be followed out, although it will be done at such times as the machinery can be moved without causing too great loss in production, and will probably take a few years to complete. The rumor probably arose from the installation of new machinery in the new mill at Providence.

*South Carolina, Jonesville. A charter has been granted the Palmetto Hosiery Co., organized, as noted previously, to take over the knitting department of the Jonesville Mfg. Co. The capital stock is $75,000. J. J. Littlejohn is president and treasurer. When fully equipped, the company will have 100 knitting machines, 20 ribbers and 20 loopers for the production of half hose of a fine grade. The branch plant at Bristol, Tenn., has been moved here.

*South Carolina, Landrum. As stated previously, the Blue Ridge Hosiery Mill will build an addition. The enlargement will consist of a 54-foot extension to the present building and contract for construction work has been awarded. No provision has been made for new machinery which will be required.

Tennessee, Knoxville. A few knitting machines, the number has not been decided upon, will be added to the equipment of the Standard Knitting Mills and the dyeing capacity will be slightly increased. Reports that they will build a new mill and double their capacity are greatly exaggerated.

Dyeing, Bleaching, Printing, Etc.

BLEACHING MERINO FABRICS.

BY DR. LOUIS J. MATOS.

Merino fabrics are of two kinds, viz: woven and knitted, and technically they are made of yarns composed of wool and cotton, the average proportion being 50 per cent. of each. The question of bleaching these fabrics is a matter that has caused much concern in times past owing to differences of opinion expressed by various authorities, some believing that one process was better adapted than another, etc.

The question is again brought up in view of a recent inquiry asking for further light upon the subject and it is hoped that the following facts may be sufficiently complete as to enable the manufacturer to form some conclusion as to which method he desires to adopt.

Perhaps it would be well to consider the bleaching of merino cloth first. Three methods are used, being respectively bleaching with sulphur, the so-called "sulphur house" method; bleaching with peroxide of hydrogen or of sodium, and bleaching with permanganate. In adopting any one of these processes (to be afterwards described) the object of bleaching should not be overlooked, that is, whether a pure clear white is to be obtained or a bleach sufficiently clear for the production of pale, bright shades.

BLEACHING WITH SULPHUR,

This is the cheapest method possible to adopt, and to carry it out successfully with piece goods requires that the sulphur house should be of sufficient size to contain the cloth. It frequently happens that sulphur houses have been built entirely too small for the purpose, that there was overcrowding of goods, that the amount of air available to convert the sulphur into sulphur dioxide was much below the amount actually required.

Prior to sulphur bleaching the cloth should be thoroughly well scoured with soap, afterwards washed free of excess of soap. Certain yellow patches and streaks in sulphur bleached goods have been found to result from remaining traces of soap. (Light yellow patches on goods coming from the sulphur house are found to be deposits of fine sulphur sublimed and condensed on the goods. This is due to an insufficient amount of air in the sulphur chamber—the sulphur merely vaporizing and condensing again on the colder cloth as sulphur—really a form of flowers of sulphur, and extremely difficult to remove from the cloth. This accident seldom happens.)

The goods should be hung in the sulphur house in a damp condition, but not wet, and 12 hours under normal condition should be allowed for a good bleach.

Where very large quantities of cloth are to be regularly bleached, economy will suggest the placing of a continuous bleaching apparatus. After bleaching with sulphur, the goods should be thoroughly washed in cold water, afterwards softened by being washed in a bath containing about 4 ounces of soap to each 10 gallons of water at a temperature of about 90° F.

Drying after bleaching, if the goods are not to be dyed, should be carried out at as low a temperature as possible; prolonged drying at high temperature causes the fabric to become harsh to the feel.

BLEACHING WITH PEROXIDES.

Although somewhat more costly to operate, the best and most permanent white on merino goods is obtained by bleaching with place. It is for sale by the leading machine the peroxides, the oldest being the peroxide of hydrogen to be obtained commercially of a strength known as "10-volume," which means that every pint of the liquid is capable of yielding when properly decomposed in the bleach bath, 10 pints of active oxygen.

The following is a practical bleaching recipe for merino cloth.

The bleach bath is prepared with:

4 parts Cold Water, and
1 part Peroxide of Hydrogen,

adding a little ammonia or silicate of soda to make the bath slightly alkaline.

The well scoured and rinsed material is now entered, given a few turns, and the temperature slowly increased to 115° F., and the goods allowed to remain immersed over night, being kept below the surface of the liquor by means of a suitable wooden lattice. In the morning the cloth is removed, drained, passed through a weak sour, rinsed and slowly dried.

The bleach bath, after the goods have been removed, is not exhausted and may be replenished to the original bleaching strength by further additions of peroxide.

Peroxide of sodium is also much used. The bath is prepared in the following manner: For every 10 gallons of water required in the bath, add 10 1/2 ounces of ordinary 66° sulphuric acid, mix well, and add gradually 8 ounces of peroxide of sodium, stirring continually. The bath, which should then be slightly acid when tested with blue litmus paper, is made slightly alkaline with ammonia or silicate, when it is at once ready for use in exactly the same manner as previously outlined and the goods after bleaching are treated in exactly the same way.

Sodium peroxide should be handled with care, and when weighed out, iron spoons or scoops should alone be used.

BLEACHING WITH PERMANGANATE.

This method has never gained much prominence in America, but is quite commonly employed in Europe. It is doubtful, however, whether it is used to any extent in bleaching union material, except possibly for small lots. Permanganate of potassium is a powerful bleaching agent on account of the amount of oxygen it contains. In using the process, the material to be bleached should be thoroughly cleansed.

The bleach bath is prepared with cold water to which is added from 2 to 4 per cent. of commercial permanganate previously dissolved in warm water. The goods are entered in a damp condition and run for 1/2 hour, or until they have taken on an even deep brown shade; then rinse thoroughly and enter into warm bath containing 1 to 2 gallons of a solution of bisulphite of sodium and about 1 quart of muriatic acid per 100 gallons, allow the goods to remain in this liquor until the brown color has disappeared entirely, then pass through a weak sour and rinse thoroughly.

BLEACHING OF KNIT GOODS.

Merino underwear material is bleached in essentially the same manner as merino cloth and hosiery manufacturers have informed the writer that of all the methods taken into consideration the sulphur-house process is the cheapest and by far the most common in use, but occasional results obtained upon knitted goods are not the best that could be desired.

The most serious drawback is that the white obtained by using sulphur is not permanent; the goods, some time after finishing, lose their brilliancy and assume a yellowish cast. Another drawback is the tendency, once in a while, of the goods to have a harsh instead of a soft woolly feel so necessary for underwear. During bleaching there is sometimes noticed an action similar to carbonizing of the cotton and which impairs the strength of the goods.

The peroxide method of bleaching as applied to hosiery is the same as above described for cloth.

COST.

The comparison of the cost of bleaching by the sulphur-house and peroxide methods should not vary considerably if everything is taken into consideration, the fact that by the peroxide method no seconds are obtained. Underwear bleached by any method should always be soft and any modification of a bleaching process that tends to cause the fibers to become harsh should not be used.

The number of spindles in Italy increased from 1,940,000 in 1900 to about 5,000,000 in 1909, and the quantity of cotton consumed from 475,000 bales to 941,000 bales.

SPECIAL PROCESSES IN WOOLEN FINISHING.

(From the Dyer and Calico Printer.)

Shrinking: All the better cloths intended for men's wear undergo this operation, the lower grades do not. Expensive fabrics manufactured from the finest wools are much less liable to shrink than the cheaper ones, since proper allowance is made for natural shrinkage during the dyeing and finishing, and the cloth is not tortured by strains on length or width. Cheap qualities which are required to come up exactly so many ounces per yard, as well as a certain width, are rarely shrunk, as this in a generality of cases upsets all calculations.

The principle of shrinking is simple enough; merely to allow the wool to dry slowly without strain of any kind, and to retain the normal amount of moisture natural to it. Like many other processes, natural shrinkage occurs intermittently, that is to say, a soaking shower of rain followed by a drying causes only a partial shrinkage, and if repeated, results in a further contraction on a much less scale. Several wettings and dryings will yield a gradually diminishing shrinkage, until the fabric reaches the stage where all fiber stresses are in equilibrium.

There are many ways in which shrinking may be effected. Formerly a wet piece was cuttled down with a dry one, folds of each alternating. This gave dampness to the dry fabric and caused each individual wool fiber to swell up in girth at the expense of the length. In the old days, damping was done by exposing the webs to the night dews by spreading out the cloth in the fields; today fields being scarce and time more important, mechanical means have replaced these primitive measures. The quickest method of shrinking is to enter the cloth on to the ordinary steaming mill used for treating pressed material. On this, hot steam may be blown into the cloth until the fabric is quite wet. It should then be taken off and allowed to dry very slowly. Hot steam helps the shrinkage, while the large space area which the cloth has to traverse before coming to the steam box again keeps the fabric cool and prevents crimps forming. Another method is to run the cloth through hot water and hang up to dry in a cool room on a series of spars, Fig. 1.

Should there be any trace of crimps or imperfect setting of the cloth in crabbing, shrinking will bring this out and develop the fault. Many are the pieces seen by the writer which appeared even and straight enough prior to shrinking, and yet showed up so unsightly after this process as to necessitate boiling on the roll. The physical cause of crapiness and crimps becoming more distinct after shrinking is explained very easily. Take a common crimp for example. This is a crease caused by folding the hot fabric in a plastic state, and means a weakening of the natural elasticity on the line of the fold. If the fabric be dried under tension and by artificial heat the crushed and weakened fold will dry straight, but as soon as moisture enables the wool fibers to contract, these take the lines of least resistance and the weak fold lines reappear.

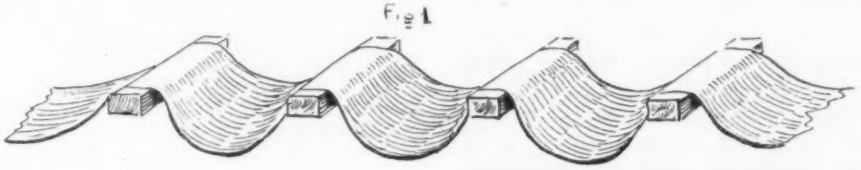
Milled clothes are of course shrunk by the milling process, but require stretching during the drying to get uniformity in width. This slight stretching is, however, neutralized by the contraction the fabric undergoes in damping before pressing, together with the steaming administered afterwards. Crapiness is a fault mainly restricted to worsteds, and those usually of the lower grades. It originates in uneven shrinkage of parts of the design in nearly all cases in the grey state, and due frequently to faulty crabbing. Acting on precisely the same lines as crimps, shrinking develops and exaggerates the defects in a similar manner.

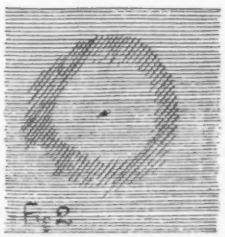
Mixtures may be termed worsted tweeds since they are composed of differently colored threads in a like manner to a tweed, but without the milling. Being woven from dyed warp and weft they are rarely crabbed, the threads being already sufficiently set by the boiling dye. After leaving the loom the first process is soap scouring, and before this it is as well to test the fastness of the dyes to alkali. Some colors not only bleed but

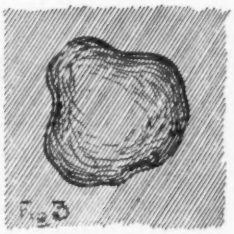
stain the adjacent colors, so that a swatch should be cut from the end of the piece and tested by hand with a little soap and soda ash.

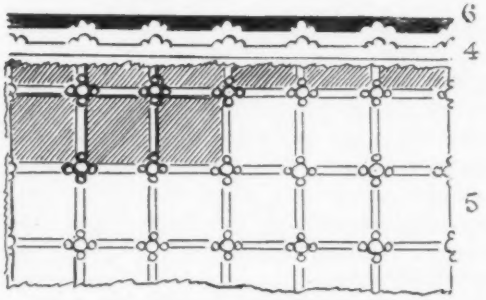
With new designs from unknown dyers it is also advisable to cut a small pattern from the cloth before scouring. This may then be compared with the scoured fabric afterwards, and any loss of color easily noted. As a rule severe scouring is not needful, the impurities being much less than in woolens.

except shearing. In this operation machines should be kept exclusively for the light and delicate shades, as greasy flocks from darker fabrics cause many unsightly stains. The flocks in question are often in the form of a fine powder, which with the oil from the cutters is soon transformed into a dark paste difficult to remove. Should the number of mixtures be so small as to preclude keeping special machines for their use, a grey or undyed piece should be run









Liquors too hot for the hand to bear are out of the question, nor should the cloth be run any longer than is necessary to clear out the soap and dirt. With this and other scouring operations a large bulk of wash liquor should be avoided. As mentioned previously, small modicums of liquor frequently replaced answer best. Soap should also be sparingly used, but should be of good quality and used along with a little soda ash and ammonia. If not thoroughly washed out, soap will sometimes cause a white, cloudy effect on the face of the cloth, only appearing in the finished fabric.

Following scouring, mixtures or fancies should be tentered at once. If allowed to lie for a time wet, there is a danger of the whites being stained, particularly if cotton checking threads are present. After drying, the usual processes of shearing, perching, damping and pressing are gone through, none of which require any special comment

through first to clean the machine. Stoved whites, such as tennis cloths, yachting serges and cricket flannels are much harder to deal with than mixtures. With all the care possible these fabrics will gather stains. They make necessary the most scrupulous cleaning of scrays, machinery and hands, as the slightest trace of oil or dirt causes a stain. Generally each piece is carried about covered with a clean wrapper, but whoever has these goods to finish in a mill where dyed fabrics are finished has trouble in wait for him.

Tentering is the most risky operation through which stoved goods have to pass, due to the close proximity of the cloth to the chains and slides. Both these must be kept well lubricated or working would be impossible, while the high temperature naturally causes the oil or tallow to creep into parts not intended for it. Whites as well as mixtures invariably require some

cleaning when they reach the perch, and this must be done in the most careful manner. As a rubber, it is usual to cut a strip from the end of the cloth and roll this tightly into a cylinder; this with benzine and clean blotting paper is all that is required. There is a wrong and a right way of applying benzine. The wrong way is to apply it directly to the grease spot, which promptly spreads out into a ring carrying a circle of grease at the edge. No matter how much benzine is applied, the ring grows larger and spreads the stain over a larger area. The correct method is to place a sheet of clean blotting paper underneath the stain, both paper and cloth being stretched on a smooth surface. Then, with the rubber, draw a circle of clean benzine all around the spot, but well away from it, Fig. 2. By moistening this ring with benzine it will grow in size until it reaches the grease spot, and by so doing will prevent the grease spreading; benzine and grease may then be beaten through into the absorbent paper. Fig. 3 shows the manner in which a grease stain spreads when touched with benzine, the spirit appearing to drive the grease before it to the extreme edge of the ring.

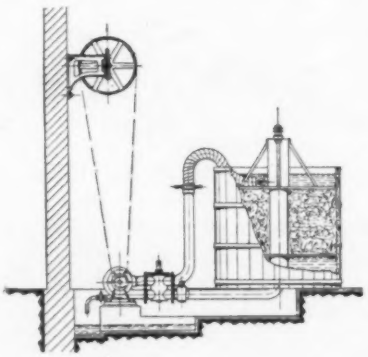
Embossing is a process which has a limited vogue today, and that of course is restricted to cheap imitations of woven designs. Formerly it had a large field in the mantle trade, but is most commonly met with now in the lower grades of upholstery goods. To receive an embossed pattern, the fabric must possess a pile or nap which is capable of retaining a bold impression of the design. On woolens this is produced by careful raising which gives a lofty and soft pile. Embossing is more general in the flannelette trade than in the woolen, and some most artistic effects are produced by a combination of printing and embossing.

In the early days of the woolen trade, long webs were woven specially for the purpose of transferring their pattern to the face of a softer cloth. These webs were of the same length and width as ordinary cloth, but were woven from hard spun material and with a clean, prominent design.

(To be continued.)

THE IMPROVED OBERMAIER DYEING MACHINE.

The well-known builders of automatic dyeing machines, Obermaier & Co., Lambrecht, Germany, have recently brought out an improved dyeing apparatus which deserves special attention. It is made of a round tank of wood, copper, nickel or iron to receive the material and dyeing liquor. This tank is built with a perforated false bottom and with a central pipe with orifices and closed



OBERMAIER DYEING MACHINE.

at the top. A steam coil serves to heat the bath and can be used either as an open or closed coil. The loose stock, rags or skeins, are spread on the perforated false bottom and covered with a perforated top to hold the material in place. This cover is constructed so that it falls into place automatically and is held firmly in position. A simple device consisting of two pipes connected by a 4-way valve serves to change the direction of the circulation. By giving the valve a quarter of a turn the direction of the current is changed so as to force it up or down through the material. The circulation is maintained by a pump which requires very little power. The liquor can either be drawn off and run to waste or carried to storage tanks.

In dyeing skeins the material is arranged in layers. In this way it is claimed that felting and tangling of the yarn is avoided. The machine can be built with two dye tanks connected to one pump. By this arrangement

one tank can be used for dyeing while the other is being emptied and filled again. The alternating circulation of the bath insures uniform dyeing, whether of wool, cotton or rags. By reason of holding the material firmly in position it comes from the bath in as good condition as when entered. It is also claimed that there is economy of power, steam and floor space.—L'Industrie Textile.

STREAKS AND MARKS ON DYED AND FINISHED FABRICS.

BY ALCOLON.

Certain classes of worsted fabrics after having been dyed and finished have the tendency when being made up into garments of showing innumerable streaks of short length and which have the general appearance of scratches. Goods of this character are usually light in weight and belong to the general class of fabrics popularly designated as "ladies' diagonals."

According to the grade of material they may be manufactured from strictly new and pure wool, while in some instances extracted stock is used, and although not most frequently the goods may be made of several-times reworked stock, with just enough new pure wool to impart firmness and aid in retaining a reasonably good finish.

Defects of the kind above alluded to have been often and always erroneously charged to bad dyeing, at other times to some real or imaginary defect in finishing has been regarded as being at the bottom of the trouble. Dyeing of this cloth is generally carried out in the piece, several methods being in common use and each with its own group of advocates. The simplest method of dyeing is to apply suitable colors from an ordinary acid dye bath and it is the cheapest method for coloring such goods. The group of colors employed are those known collectively as acid colors and especially those possessing easily leveling qualities, assuming that the fabrics are thoroughly well cleaned before dyeing and if necessary carbonized. Goods are entered into the dye bath containing a suitable amount of color, Glauber's salt and bisulphate of soda in suitable proportions, or Glauber's salt and sulphuric acid. Dyeing usually requires boiling for 1 to 1 1/4 hours.

There are certain modifications of this dyeing process, but the differences are not enough to warrant giving them. If by this method of dyeing different colors are applied to ladies' worsted dress goods, other things being equal, any marks or scratches are most likely to appear, if they appear at all, more in dark colors than in light colors. The other method of dyeing this kind of cloth is with the anthracene colors, producing shades of intensity and great fastness, but which require either a preliminary mordanting of the wool with bichrome, or by the addition of bichrome to the batch together with the dye, or dyeing first and then after-chroming by adding bichrome to the exhausted dye bath; in any case, the result aimed at is to cause a thorough and complete fixation of the coloring matter on the fiber. Wool so dyed, for example, dark blue, brown, green, maroon, black or other heavy shade with colors of this group, the coloring matter is a part of the fiber and cannot be removed by any other than chemical means.

Having briefly discussed the dyeing methods as applied to this kind of material, we are in a position to locate the cause of the streaks and marks first referred to. As these marks appear most frequently when the cloth is much handled, it leads to the conclusion that the defect is strictly mechanical and the result of friction or abrasion. As we write, we have before us two pieces of ladies' light weight worsted dress goods, both dyed a good full shade of navy blue; the color does not crock, but upon passing some hard substance over the face of the goods so as to cause a scratch, a white line appears; so, also, if the sharp edge of the pocket magnifying glass, for instance, is drawn broadside across the cloth, the latter becomes grayish, and if we examine under the microscope the face of this cloth after it has been abraded in the above manner, we notice that the apparent grayness which forms the streaks in question to be due to very small broken fragments of the fibers,

and which after the piece of cloth so handled is lightly shaken out or brushed, the streaks disappear entirely, leaving the cloth in its original condition.

We have noticed in a number of instances a similar difficulty, and we have found further, that this difficulty can be traced directly to a brittleness of the wool used in making the cloth. This brittleness may be due to several causes. To state which one is the cause in some particular piece of cloth is practically impossible without knowing all the details of manufacturing the particular piece of cloth under examination.

The causes may be due to the following: Too much acid during carbonizing; excessive heating after drying if the goods have been carbonized; destructive action of remaining traces of acid in the goods after dyeing with acid colors; imperfect washing after dyeing with chrome colors and excessive drying afterwards. Any one of these causes may have a marked influence on the cloth after finishing.

In none of the above have we considered the fact that some of the raw material of which the cloth is made may be reworked wool or shoddy which is naturally very brittle. The streaks and marks therefore resolve themselves into the brittle condition of some of the wool fibers that go to make up the cloth, and to prevent which the dyer and finisher should exert every effort.

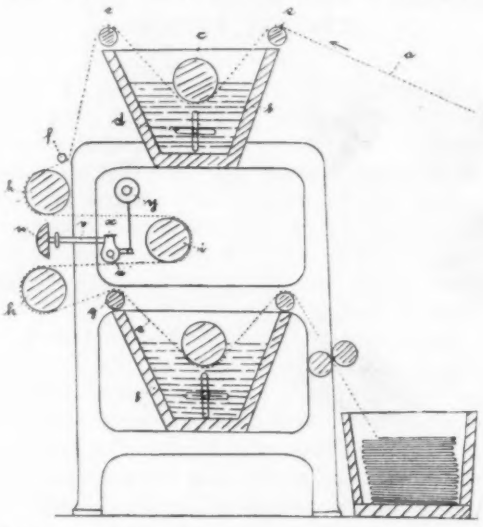
It must be borne in mind, however, that wool fibers made brittle by either defective scouring or redying cannot be made pliable or elastic by the finisher.

The exports of raw cotton to Italy since 1880 increased from 59,126 bales to 565,695 bales in 1909.

Not less than 9,000,000 persons are employed in the production, handling and manufacture of American cotton. Of this number, about 6,000,000 are farmers and farm laborers; about 1,000,000 are otherwise engaged, to some extent, with the raw material in the United States; while at least 2,000,000 are concerned with it in foreign countries.

DYEING TURKEY RED ON HEAVY FABRICS.

The machine shown in the illustration has been built by the Eitorfer Tuerkischrot-Stueckfaerberei, Eitorf, Germany, for dyeing Turkey-red on heavy drills and similar goods, which the dye penetrates with difficulty. The cloth to be colored, a, is passed under the roller, c, and through the dye liquor in the tank, b. A revolving paddle, d, serves to keep the solution well stirred.



After coming from the liquor the cloth passes over the guide rolls, e, and f, and then over the rolls, h, i and k, through the dye liquor in the lower tank and is then folded in a box outside the machine. Between the rollers, h and k, is fixed the beater, u, at the end of a flexible rod, v. The beater, u, is vibrated by the eccentric, y, with which the crank, x, is connected. This vibration causes the beater, u, alternately to strike the cloth on the rollers, h and k, pounding the dye which lies on the surface of the heavy cloth into the center of the fabric. It is stated that this device has been used under working conditions for some time in Germany and given good results.—Oesterreich's Wollen Und Leinen Industrie.

During the fiscal year ending March 31, 1909, the imports of cotton goods into Canada were valued at $11,469,095.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 49.

Orange on Worsted Yarn.

Meta Chrome Orange 3 R on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Meta Chrome Mordant,

dissolved in the bath and then add

3 lbs. Meta Chrome Orange 3 R,

previously dissolved.

(Berlin Aniline Works, 213 Water St., N. Y.)

15 lbs. Glauber's Salt.

Enter yarn at 140° F., bring to a boil and dye at a boil for 1 hour after the color has been practically exhausted from the bath.

Meta Chrome Orange 3 R possesses very good fastness to light, washing, alkalies and perspiration.

Recipe No. 50.

Blue on Worsted Yarn.

Neptune Marine Blue B B T Pat. on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Neptune Marine Blue B B T Pat.
(Badische Co., 128 Duane St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for 1 hour.

Neptune Marine Blue B B T Pat. produces a heavy shade of navy blue possessing good fastness to light.

Recipe No. 51.

Yellow on Cotton Yarn.

Direct Yellow G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Direct Yellow G.
(Geisenheimer & Co., 189 Front St., N. Y.)
25 lbs. Common Salt.

Enter at 180° F., and dye at a boil for 1 hour. Direct Yellow G can be recommended on account of its cheapness, its level dyeing properties, and its fastness to light.

Recipe No. 52.

Brown on Worsted Yarn.

Mono Chrome Brown G Paste on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Mono Chrome Brown G Paste.
(Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y.)

Boil the bath for a few minutes, then add

1 lb. Potassium Bichromate,

which has been previously dissolved. The material is then entered at 140° F., the bath brought slowly to a boil, and dyed at a boil for 3/4 of an hour. Then add

3 lbs. Acetic Acid

and boil another hour and one-half.

Mono Chrome Brown G Paste possesses very good fastness to light and washing.

Recipe No. 53.

Brown on Worsted Yarn.

Chrome Brown V P on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Chrome Brown V P.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
10 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

Enter at 140° F., raise slowly to a boil and dye at a boil for 1/2 hour, and then add

4 lbs. Bisulphate of Soda

and continue the boiling until the bath is clear, then add

2½ lbs. Potassium Bichromate

and boil for 1 hour longer.

Chrome Brown V P possesses good fastness to the ordinary color destroying agencies. It should not be used in bright copper vessels, as it is susceptible to this metal.

Recipe No. 54.

Pink Print on Cotton Cloth.

Rosaline G S Paste printed on cotton cloth. Make up a paste as follows

15 parts Rosaline G S Paste.
(American Dyewood Co., 84 William St., N. Y.)
120 parts Acetic Acid, 8° Tw.
163 parts Water.
650 parts Gum Arabic Solution 1:1.

Heat until the Paste is dissolved, stir and when cold add

12 parts Tartaric Acid 20 per cent.
40 parts Tannic Acetic Acid Solution 1:1.

Print, steam for 1 to 1 1/4 hours, pass through Tartar Emetic, soap, wash and dry.

Rosaline G S Paste gives bright clear pink prints of ordinary fastness to light and soaping.

Recipe No. 55.

Gray on Worsted Yarn.

Anthracene Chromate Grey G on 100 lbs. worsted yarn. Prepare the dye bath with well dissolved.

1½ lbs. Anthracene Chromate Grey G
(Cassella Color Co., 182 Front St., N. Y.)
¾ lb. Potassium Bichromate.
2 lbs. Magnesium Sulphate.

Enter at 160° F., work at this temperature for 1/2 hour. Then bring to a boil and dye at a boil for 2 hours.

Anthracene Chromate Grey G possesses excellent fastness to the ordinary color destroying agencies.

Recipe No. 56.

Bright Blue on Cotton Yarn.

Cotton Pure Blue B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Cotton Pure Blue B.
(Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Glauber's Salt Calcined.
2 lbs. Acetic Acid.

Dye at a temperature of 200° F. for one hour.

Cotton Pure Blue B possesses extraordinary brilliancy, and possesses good fastness to acids. Alkalies, however, must be avoided in its use.

Recipe No. 57.

Greenish Blue on Cotton Yarn.

Immedial Green Blue C V Pat. on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Immedial Green Blue C V Pat.
(Cassella Color Co., 182 Front St., N. Y.)
8 lbs. Sodium Sulphite, Crystals.
4 lbs. Soda Ash.
40 lbs. Common Salt.

Enter at 180° F., and dye at a temperature just below the boil for 1 hour.

Immedial Green Blue C V possesses very good fastness to light and acids, and good fastness to washing.

Recipe No. 58.

Black on Worsted Yarn.

Salicine Alizarine Black Conc. Pat. on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Salicine Alizarine Black Conc. Pat.
(Kalle & Co., 530 Canal St., N. Y.)

Boil up in the bottom of the kettle with water, then fill up and add

6 lbs. Acetic Acid.

After stirring well, enter the material and bring to a boil in 1/2 hour, and boil for 3/4 of an hour. Then add

1 lb. Sulphuric Acid,

and after continuing the boil for 15 minutes longer, add

2½ lbs. Potassium Bichromate,

and boil 1/2 hour longer. Wash and dry.

Salicine Alizarine Black Conc. produces a handsome black, which possesses excellent fastness to all tests.

Recipe No. 59.

Yellow on Worsted Yarn.

Brilliant Fast Yellow No. 6,659 on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Brilliant Fast Yellow No. 6,659.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
10 lbs. Glauber's Salt.
2½ lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for 1 hour.

Brilliant Fast Yellow No. 6,659 possesses exceptionally good fastness to sunlight, and is a very level dyeing color.

Recipe No. 60.

Red on Cotton Yarn.

Direct Red 10 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Direct Red 10 B.
(C. Bischoff & Co., 451 Washington St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Enter at a temperature just below the boil and dye at a boil for 1 hour. Direct Red 10 B produces a red of a bluish hue, which possesses the characteristic properties of the direct cotton colors.

Recipe No. 61.

Yellow on Worsted Yarn.

Milling Yellow No. 85 on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Milling Yellow No. 85.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
10 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

Enter at 120° F., bring slowly to a boil, and dye at a boil for 1/2 hour. Then add

4 lbs. Bisulphate of Soda,

and continue the boiling until the bath is clear. Then add

1¾ lbs. Potassium Bichromate,

and boil for 1 hour longer.

Milling Yellow No. 85 possesses good fastness to the ordinary color destroying agencies. It is not susceptible to the action of copper.

Recipe No. 62.

Red on Cotton Yarn.

Helindone Red B Paste Pat. on 100 lbs. cotton yarn. Prepare the stock liquor with

25 lbs. Helindone Red B Paste Pat.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
30 gals. Water.
5 lbs. Helindoil.
13¾ lbs. Caustic Soda Solution 40° Be.

6¾ lbs. Hydrosulphite M L B Conc. Powder are finally stirred in and the mixture heated to 140° F. The reduction is complete in 1/2 hour, as shown by a greenish-yellow vat and perfect solution.

Prepare the dye bath with water, equal to 20 times the weight of material being dyed, heated to 130° F. The required amount of stock liquor is then added. After stirring the bath, which should have a greenish yellow color, the yarn is dyed on bent sticks, working it in the liquor for 1/2 hour, and then wrung out evenly, and allowed to oxidize in the air for some time. It is finally soaped, for 1/2 hour, in a boiling soap solution containing 2 parts soap to 1,000 parts of water.

Helindone Reb B Paste gives a brilliant bluish red shade possessing equal fastness to the Helindone Scarlets.

Recipe No. 63.

Violet Print on Cotton Cloth.

Brilliant Chrome Violet printed on cotton cloth. Make up a paste as follows

500 parts British Gum Solution 1:1.
30 parts Brilliant Chrome Violet.
(American Dyewood Co., 84 William St., N. Y.)
30 parts Formic Acid, 75 per cent.
405 parts Water.

Heat until the dyestuff is dissolved, stir and when cold add

10 parts Tannic Acetic Acid Solution 1:1.
25 parts Acetate of Chrome, 28° Tw.

Print, steam for 1 to 1/2 hours, soap, wash and dry. A great fastness to soaping is obtained by passing the goods through Tartar Emetic before soaping. Brilliant Chrome Violet gives bright violet prints of good fastness to soaping and light.

Recipe No. 64.

Blue on Cotton Yarn.

Indigo M L B 6 B on 100 lbs. cotton yarn. Prepare the stock liquor with

15 lbs. Indigo M L B 6 B.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
120 gals. Water.
9 lbs. Caustic Soda Solution, 40° Be.
9 lbs. Soda Ash.
6 lbs. Helindoil.
3¾ lbs. Hydrosulphite M L B Conc. Powder

are finally stirred in and the mixture heated to 140° F. The reduction proceeds quickly and is complete when the solution is of a golden yellow color.

Prepare the dye bath with water, equal to 20 times the weight of material being dyed, heated to 130° F. The required amount of stock liquor is then added. After stirring the bath, which should have a gold yellow color, the yarn is dyed on bent sticks, working it in the liquor for 1/2 hour, and then wrung out evenly, and allowed to oxidize in the air for some time. It is finally soaped in a boiling soap solution, containing 2 parts of soap to 1,000 parts of water, for 1/2 hour.

Indigo M L B 6 B is a new vat color of the indigo group, which yields brilliant greenish blue shades of remarkable fastness. It may be used in silk dyeing as well as for cotton.

The world's production of animal silk has increased during the past century from 30,000,000 pounds to about 60,000,000. The approximate annual production of artificial silk is about 8,000,000 pounds.

The number of cotton spindles in China has increased from 550,000 in 1900 to 800,000 in 1909, and the estimated quantity of cotton consumed is from 200,000 bales to 400,000 bales.

During the last 30 years quite a new trade has sprung up in Bradford in the export of waste, noils, and tops. In 1882, which was about the beginning of this development, the export of the three combined was only 1,000,000 pounds, but in 1907 the exports had grown to 57,500,000 pounds. The export of yarns in 1854 amounted to 15,700,000 pounds, in 1882 to 40,500,000 pounds, and in 1907 to 83,000,000 pounds.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Yarn Conditioner. C. G. Sargent's Sons, Graniteville, Mass., are placing on the market the Amoskeag yarn conditioner which is described in this issue.

Warper for Narrow Fabrics. The Cocker Machinery Co., Frankford, Philadelphia, Pa., are introducing an improved warper designed especially for making warps for narrow fabrics. An illustrated description of the machine appears in this issue.

First Breaker Card Feed. Smith & Furbush Machine Co., Hancock and Somerset Sts., Philadelphia, Pa., have embodied a number of improvements in their automatic self-weighing feeder for first breakers, a description of which appears in this issue.

Tulle Machine. E. Lacharriere & Co., 52 Queens Road, Notingham, England, are introducing to the British trade an improved silk tulle loom which has been perfected in France. The new machine is of simple construction, capable of a high speed and consequently of a large production. It is provided with an automatic stop which prevents the formation of holes, resulting in a large saving in mending.

Hanger for Shafting. The Textile Appliances, Ltd., 8 Springfield Road, Glasgow, Scotland. A hanger which is designed to be fastened to mill posts for supporting shafting.

Polishing Machine. Walter Stoss, Crimmitschau, Germany. A machine for smoothing and polishing woven and felted fabrics of all kinds.

Wool Washing Machine. Dieudonne Bouchat, Verviers, Belgium. A wool scouring machine in which the wool and scouring liquor are carried together through a standpipe at the top of which the liquor overflows while the wool is carried by an apron to the next tank.

Air Moistening and Ventilating. E. Mertz, Maschinenfabrik, Basel, Switzerland. A system of air moistening and mill ventilation. In addition to keeping the humidity uniform, it is claimed that the apparatus enables the mill to be well ventilated and the air heated in winter and cooled in summer.

Dyeing Machine. The Eitorfer Tuerkischrot-Stueckfaerberei, Eitorf, Germany. A machine for dyeing Turkey-red on heavy and tightly woven goods. It is provided with a beater which by pounding the goods assists in forcing the dye into the fabric.

Yarn Tension Device. Johannes Elster, Adorf, Germany. A tension device for winding machines by which the tension is kept uniform. It is stated that tests under working conditions in a number of European mills have proved the success of the device.

Yarn Vibrator. J. J. Rieter & Co., Winterthur, Switzerland. A vibrating device for spooling and winding machines. The yarn is guided by a spiral groove in a roller and is thus vibrated sideways as the roller revolves.

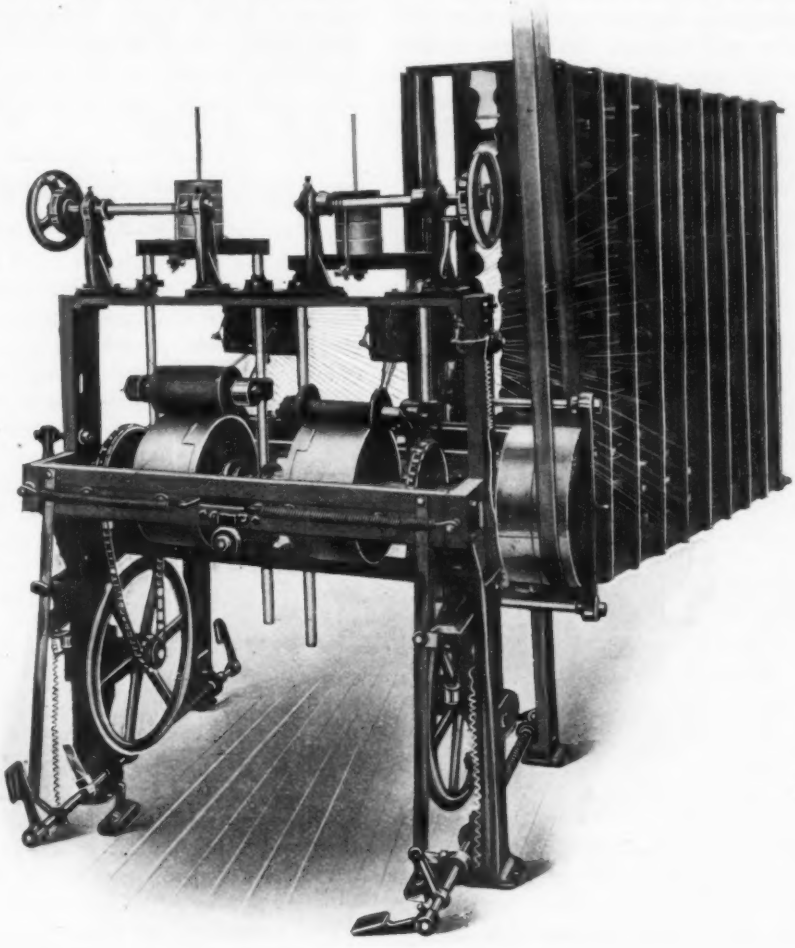
Heilmann Comber. Schubert & Salzer, Chemnitz, Germany. An improved Heilmann comber for which an increased production and reduction in percentage of noils are among the claims.

Spinning Artificial Silk. Societe Anonyme des Celluloses Planchon, Lyons, France. An improved apparatus for spinning artificial silk and which has been protected by patents in the principal countries.

THE COCKER WEB WARPER FOR NARROW FABRICS.

This machine has been especially designed for making warps for narrow fabrics, such as suspender and garter webbings, shoe goring and other elastic and non-elastic goods. It is built by the Cocker Machinery Co., Frankford, Philadelphia, Pa., who state that it will effect a material reduction in the cost of warping, producing a much better weaving warp, and increasing the production of the loom. This warper will traverse the yarn on the beam in a chain or wind it flat as desired. It is equipped with two independent drums, which can be easily adjusted to suit the width of the beam. The traverse for each beam is also separately adjustable so that two beams of different widths can be run on the machine at one time.

An electrical stop motion located in the creel, within a few inches of the spool, will stop the machine for broken ends, allowing the operator to piece the end before it winds onto the beam and eliminating the pulling back of the warp which is necessary with a web warper not equipped with an electrical stop motion. As each drum drive is inde-



THE COCKER WEB WARPER FOR NARROW FABRICS.

pendent of the other, a broken end will only stop the beam in which the break has occurred, allowing the other beam to go on running. If required, clocks are furnished, which will stop either drum at any set number of yards.

Owing to the fact that beams of so many different patterns and descriptions are used in narrow fabric manufacturing, a stop motion for a web warper, to be practicable, must be not only absolutely dependable in operation, but easily understood and adjusted by the operator as well. These requirements are met by the electric stop motion located in the creel.

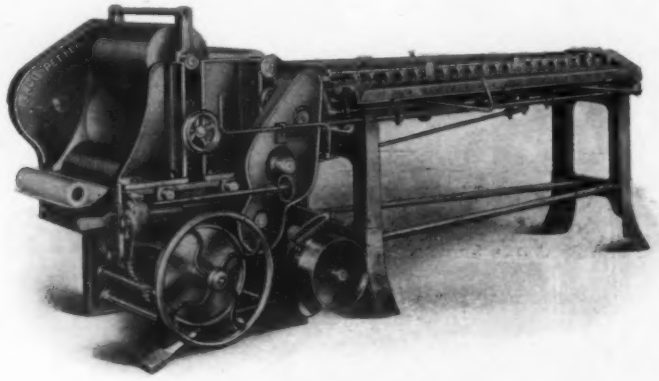
The creels are arranged in V shape, the point towards the warper, and are furnished 12, 14 or 16 spools high. An electrical strip is fixed vertically a few inches in front of each row of spools. From the strips hang drop wires, one for each thread. As long as the threads are intact, the drop wires are held up out of circuit. The instant a thread breaks, its wire drops, the electrical circuit is made and the knock-off mechanism stops the drum on which the thread has broken. The other drum is not affected and continues winding as long as its threads are unbroken.

A separate switch for each strip and an insulator for each drop wire allows a quick adjustment of the stop motion to suit the beam to be made without touching the mechanism of the warper proper. With sufficient creel capacity, the operator can be running both drums and at the same time putting up other patterns in the creel, as the stop motion will take care of any trouble that may occur.

All adjustments and changes necessary can be made by the operator and do not require the attention or assistance of the overseer of the room. Although fitted with independent traverse and adjustable and independent drums, this machine takes up no more floor space than the smallest of the old type of web warper.

THE SACO & PETTEE IMPROVED LAP WINDER.

Since the revolving flat card has been in extensive use in this country there has been much discussion among mill men as to the comparative merits of the old system of double carding on top flat cards and single carding on revolving flat cards.



THE SACO AND PETTEE LAP WINDER.

The economic advantages, however, of single carding on revolving flat cards in the manufacture of ordinary goods such as print cloths, etc., have been sufficient to displace the top flat cards almost entirely for either double or single carding. Many successful manufacturers of higher grade goods have regretted the loss of double carding. As a result the revolving flat card has been adopted for double carding. By this means

superior goods are being produced at less cost than was previously possible from single carding. For some purposes also, yarns can be made from double carding superior to combed yarns from the same stock at less cost and with less waste. For the shorter staples double carding in place of combing is rapidly coming into favor.

To meet the requirements of double carding on revolving flat cards, the Saco & Pettee Machine Shops have recently designed and put on the market an improved lap winder, a cut of which is shown herewith. This machine is made in two standard sizes, 20-inch and 22 1/2-inch, to make laps for cards 40 and 45 inches wide, respectively.

The back or stop-motion section, which is of an entirely new design, takes 42 cans, or 21 on each side, from the breaker cards, and forms a lap 19 1/2 or 22 inches wide, from the 42-breaker card slivers, as may be required. A stop motion is provided on each side to stop the machine when an end breaks down or runs out. The details of the stop-motion are the same as those on the latest Saco & Pettee drawing frames with stamped steel spoons, which can be adjusted to accommodate any size of sliver required.

The calender or lap head is of an entirely new construction, with extra-heavy frame, machined racks working in grooves milled in the frame sides, and improved rack-lifting motions. All gear and rack teeth cut from the solid, assuring a smooth-running, noiseless and durable machine. A very solid square-ended lap is formed on a hardwood spool, and two of these laps go on to the finisher card. A descriptive catalogue showing floor plan, etc., of this machine will be furnished to those interested upon application to the Saco & Pettee Machine Shops, Newton Upper Falls, Mass., and Biddeford, Me.

Of the 8,895,970 bales of cotton exported from the United States in 1909, 3,665,355 bales went to the United Kingdom, 2,438,090 to Germany, and 1,098,173 to France.

THE AMOSKEAG YARN CONDITIONER.

This machine is built by C. G. Sargent's Sons, Graniteville, Mass., for the purpose of conditioning filling yarns preparatory to weaving. The five principal methods now in use for conditioning yarn may be summarized as follows: 1, Steaming; 2, Sprinkling; 3, Dampening; 4, Immersing, and 5, Aging.

Steaming—This method appears to be used less than any of the others, and while there is little doubt of its preparing the yarn fairly well, it is also very sure to work great injury to the bobbins.

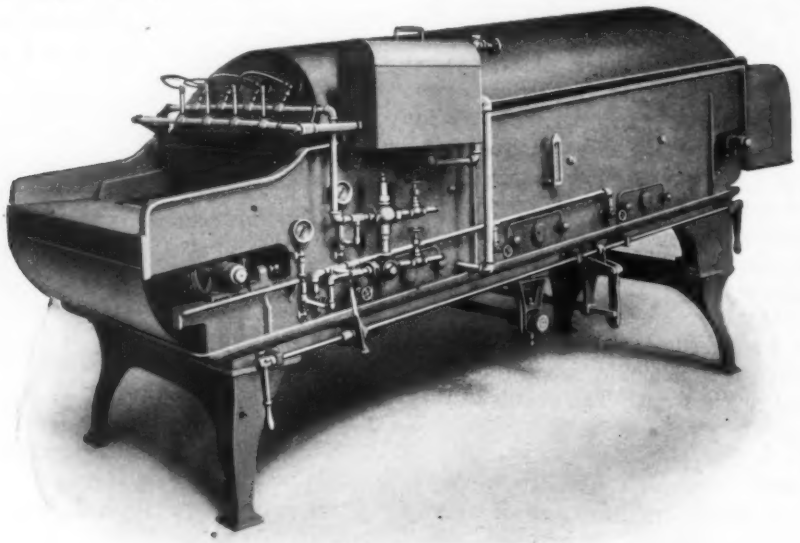
Sprinkling—This method makes use of a common watering pot or a hose pipe with a spray nozzle, the bobbins being sprayed or sprinkled while in boxes or bins. The objection to this method is that the wetting is only superficial and considerable time is required for the moisture to penetrate the yarn. The bobbins are necessarily wet unevenly, and the moisture is unevenly and imperfectly absorbed; too much or too little moisture is applied, and it would hardly be expected that this method should give uniform results. Bobbin deterioration is pretty sure to result.

Dampening—The bobbins are placed in boxes generally made with perforated ottoms and sides, which are placed in a storeroom frequently made especially for the purpose. A damp, warm atmosphere is maintained artificially. This method generally calls for an exposure of from 12 to 72 hours. It is quite expensive, as it calls for extra space, labor and increase of bobbins and boxes. Moreover, long exposure of the bobbins to the heat and moisture and their subsequent drying out in the weave rooms and spinning rooms produces a warping or shrinking with which most mills are familiar. Frequent reaming out is the natural sequel to this method of treatment, also bobbins having the protecting rings on the butt are liable to injury, due to the wood expanding and contracting and thereby causing the rings to become loose and fall off entirely.

Immersing—Occasionally, for lack of bet-

ter methods, the weaver will dip the bobbins in a bucket of warm water. This method seems too crude to dwell upon. The effect is probably more on the bobbins than on the yarn. The water penetrates the interior of the former, which is not calculated to improve its utility. As to the yarn, it is wet on the outside, and through lack of time for proper penetration, it goes to the shuttle with an incomplete preparation.

The Amoskeag system is believed to be superior to all of the five named above. The machine which is employed is shown in the accompanying illustration. A selecting table is placed flush with the feed plate of the machine. The bobbins, brought in trucks or boxes from the spinning room, are dumped upon the selecting table, from which point the operator pushes them forward to the traveling apron. While passing through the machine on the apron the bobbins are subjected to a supersaturated atmosphere of from 90° to 120° F. The moist atmosphere is obtained by the use of turbo-humidifiers placed outside the front end of the copper hood, the latter having suitable apertures through which fine sprays of water are introduced. For this system the bobbins are not sprinkled with water, but are exposed to a saturated atmosphere at a fairly high temperature.



THE AMOSKEAG YARN CONDITIONER.

Aging—Perhaps the safest, though not necessarily the least expensive of the methods described herein, is the natural method of aging. This method calls for a large amount of space, frequently in the basement, in which the yarn, on the bobbins, is stored in trucks and allowed to remain for a number of days or as long as conditions allow. No heat or moisture is used, time and the natural atmospheric conditions being depended upon. Although this method cannot be said to injure the bobbins, it will naturally be seen that an extensive supply of filling between the spinning and weaving is called for. A large amount of room and a great number of bobbins become necessary. The labor bill is also liable to be large.

The Turbo-Humidifiers are used not only from their ready adaptability to this particular machine, but because of their ability to inject currents of finely pulverized water, giving a lively, foggy atmosphere beneath the hood, with little surface condensation on the yarn or bobbins. Further agitation

of this atmosphere, as well as the requisite temperature, both of which increase its penetrating qualities, is obtained by the introduction of three perforated steam pipes beneath the wire-cloth apron. Each of these pipes has two rows of small holes at right angles, and at 45° from the vertical.

A shaft conveniently located at the side of the machine, and with a handle at each end, shifts a belt which starts and stops the apron. Suitable connection is made between this shaft and a governor valve, so when the apron is stopped the steam supply to the perforated pipes is shut off. By this arrangement no direct steam comes in contact with the bobbins, as they may lay upon the apron when the latter is stopped. An angle-valve controls each perforated pipe. A pressure gauge shows the pressure on these pipes, and there is also a supply valve which may be used for controlling the amount of steam to the whole system of perforated pipes.

The humidifiers draw water from a constant supply tank attached to the machine. The level of the water is controlled by an overflow and float valve. The humidifiers may be arranged to inject the proper amount of spray either by the use of compressed air or steam, the arrangement of piping being the same in either case. A pressure gauge constantly shows the pressure under which the heads are working. A reducer valve is furnished which reduces any excessive supply pressure to that under which the heads are designed to operate.

The temperature under the hood is indicated by a thermometer at the side of the machine. The amount of moisture absorbed can be controlled by regulating the supply of steam and water and also by changing the speed of the apron. In this way the yarn is conditioned thoroughly and uniformly. The exposure is so slight (about sixty seconds) that the wooden bobbin has no time to absorb moisture, therefore warping and shrinking of same is obviated. The use of enameled bobbins is unnecessary.

The moisture so thoroughly and quickly permeates the yarn layers that the bobbins can go directly from the machine to the weave room without any intermediate aging, although it is perhaps better to allow a few hours' delay between conditioning and weaving. No great stock of yarns and bobbins need be kept in process between the spinning and the weaving. By the use of the selecting table attached to the machine as previously explained, detection of imperfect bobbins is permitted as the machine is being fed. As there is little or no escape of steam or drip water, the conditioner may be located directly in the spinning room.

The Amoskeag yarn conditioner will be in operation in the C. G. Sargent's Sons space at the coming Textile Exhibition in Boston, where manufacturers can obtain full information and study the working of the apparatus.

A NEW BALING PRESS.

The toggle or lever system for obtaining compression in baling presses has been in use a number of years, but few manufacturers have given this method proper thought and study so as to obtain greatest compression with the least power.

With the constant increase in cost in shipping cases, and the time and space required to handle them, the value of a baling press has become more apparent to the manufacturer and shipper in textile industries. Many such presses have been installed without considering the cost of operation, but today nearly every intending purchaser realizes that a machine must be built, so as to reduce the cost of operating expenses.

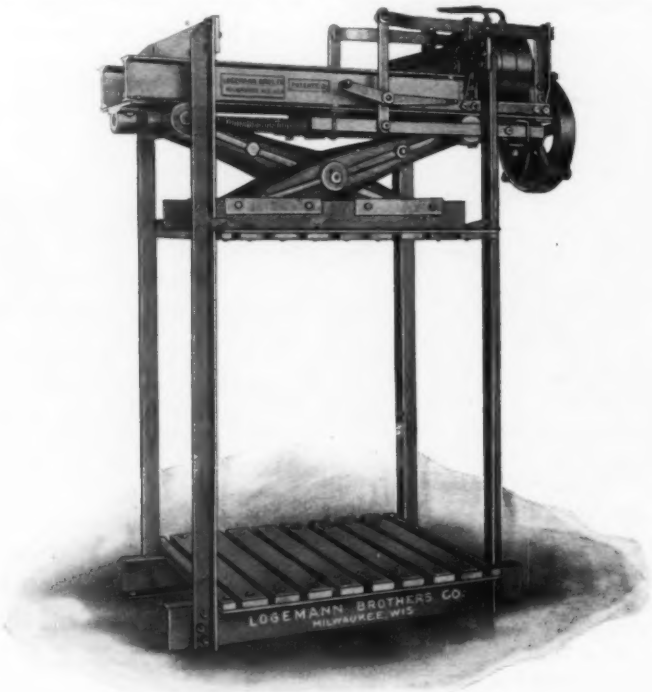
The feature of the system here illustrated lies in the fact that the main screw is stationary, and does not travel with the plattens as in the old style. Rollers are attached to the toggles and nuts, which travel on steel beams, carrying the burden of compression and not only insuring long life, but greatly reducing the power required to obtain the compression. Actual tests show that over 70 per cent. of the power has been saved with this system.

The difficulties as well as excess power used in the knuckle joint system with movable screw and chain drive are entirely overcome with the above illustrated system. Besides the noisy operation of the chain there is also the advantage of having the belt shifters connected with the pulleys direct.

All materials to be compressed naturally require comparatively little power when the pressure mechanism is started, and the more material is compressed, the more power required. The inventors of the press here illustrated are able to obtain the heaviest compression with very little increase in power.

When the upper plattern is in its highest position, and the pressure mechanism started, one revolution of the pulley will drive the platten 2 inches. As the gears continue to revolve, the distance the platten travels decreases, so that the fifth revolution will lower the platten 1 inch, and by the time the platten has reached its lowest position the distance has been reduced to perhaps 1/8 inch, the speed of the pulleys, however, having been the same throughout the entire operation.

While a great many prefer the hydraulic system, still the lever press has met with great favor on account of the reduced cost of installation. The manufacturers, Logemann Brothers Co., Milwaukee, Wis., manufacture a very complete line of baling presses and are equally advanced in hydraulics, their hydraulic pumps containing many improved devices. Detailed information will be given upon request.



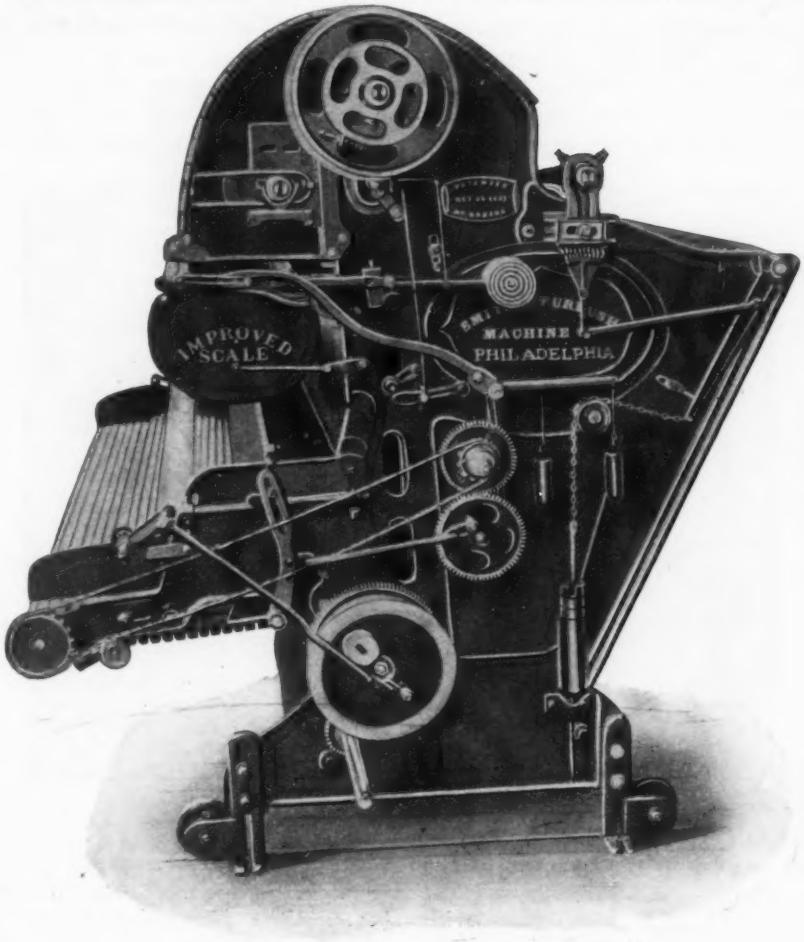
THE LOGEMANN BROS.' BALING PRESS.

The total exports of cotton goods of domestic manufacture for 1909 amounted to $31,878,566, compared with $25,177,758 in 1908, and $32,305,412 in 1907. Of the total for the year, $12,381,384 represented the value of unbleached cloths, $2,146,117 the value of bleached cloths, and $7,165,579 the value of dyed, colored or printed cloths.

THE SMITH & FURBUSH AUTOMATIC CARD FEED.

Uniform yarn depends primarily upon a uniform feed at the first breaker. If the feed is uneven at the start the defect can never be entirely overcome and the result will be irregularity in the yarn and goods.

This feed, which is shown in the illustration, embodies improvements in the scale finger rack motion and device for operating the presser board. The working parts have been much simplified and strengthened. The improved scale is built upon the principle of a platform scale, making it unneces-



THE MITH & FURBUSH AUTOMATIC CARD FEED.

This is what makes the automatic self-weighing feed at the first breaker so important an adjunct in the carding process. The Smith & Furbush Machine Co., Hancock and Somerset Sts., Philadelphia, Pa., have devoted much attention to the development of a card feed for carded woolen and worsted cards, garnett machines or special cards.

sary for the stock to fall exactly in the center of the pan in order to obtain accurate weighings.

The advantage of the Smith & Furbush scale can be tested by hanging a small weight on different parts of the scale, when it will be seen that it makes no difference on which edge the weight is suspended.

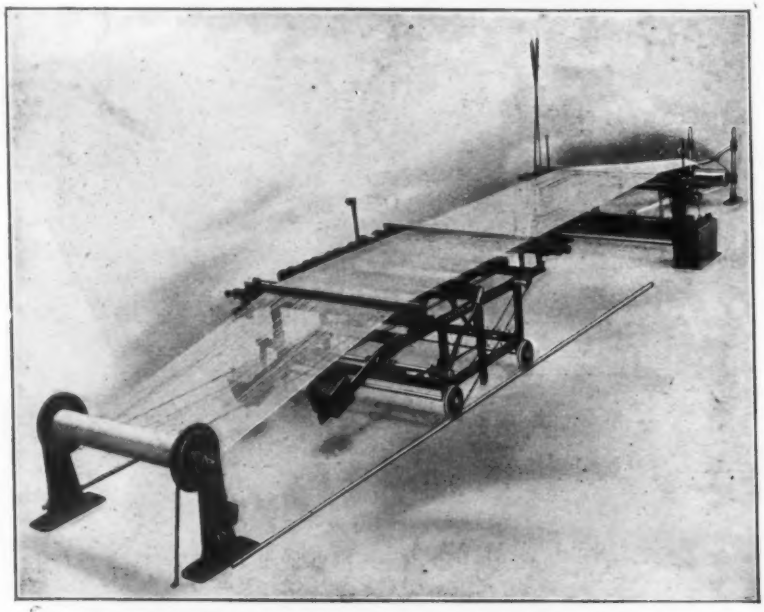
The weighing mechanism is very sensitive, ensuring great accuracy in weighing. The stock drops from the scale to the center of the feed table in such a way that the weighings are lapped uniformly on the apron. Weights have been substituted for springs owing to the liability of the latter to wear out.

The finger rack which presses the stock against the spike apron is connected with the segment gear device, which in turn operates the evener comb. This comb automatically moves towards or away from the spike apron, thus regulating the quantity of the stock fed to the scale in accordance with the amount of stock in the hopper. This device is adjusted by weights at each side of the feed box, thus dispensing with springs. The presser board for pressing the stock along the feed apron to the feed rolls is mounted on bearings supported by small shafts on each side of the feeder. The traveling distance of the board is easily adjusted.

The object of this improvement is to eliminate the long slots in the sides of the feeder. The feed is of very substantial construction, a metallic partition having been substituted for the ordinary wooden partition between the spike apron and the receiving apron. This increases the steadiness of the feed when in operation, which is very important in any feeder having a weighing device.

THE FOSTER WARP GASSING MACHINE.

This machine, built by the Foster Machine Co., Westfield, Mass., marks an important innovation in the gassing of warp yarn. The yarn is gassed after it has been warped and beamed and while being wound from the beam either onto a ball or another beam. The illustration shows 540 ends being gassed and wound onto a ball. From one to four burners may be used according to the number and quality of the yarn. The air and gas are supplied by large pipes, which ensure thorough mixing in the burner. The proportions of air and gas can be regulated closely to secure perfect combustion and the highest degree of heat with the minimum quantity of gas. In some cases the gassing frame is placed be-



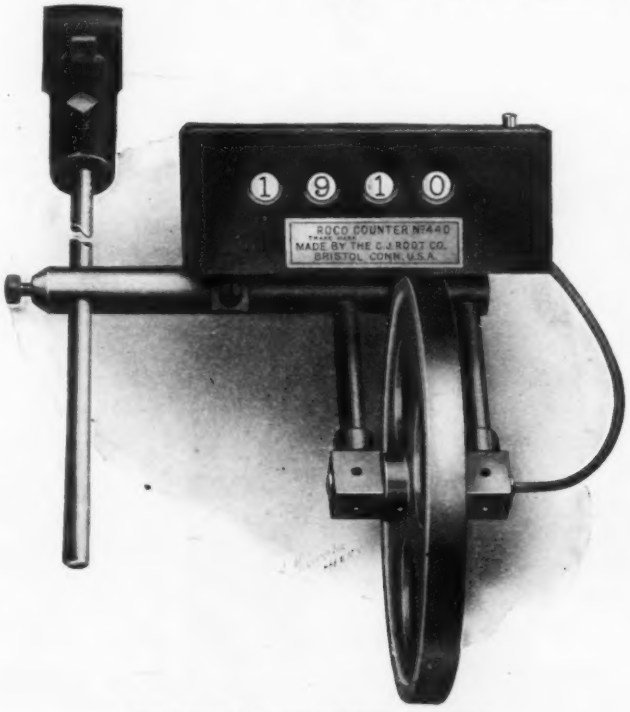
THE FOSTER WARP GASSING MACHINE.

tween warping machine and baller, thus gassing and warping in one operation.

Each thread is separated from the others and thoroughly enveloped in the flame, which is regulated to suit the work. When the machine is stopped the carriage holding the burners is moved ahead of the singed line and after the flame engages the threads at this point is moved back to its working position.

THE "ROCO" CLOTH MEASURING MACHINE.

The illustration shows a cloth measuring device manufactured by the C. J. Root Co., Bristol, Conn., and which can be easily adapted to machines on which it is desired to measure the production in yards of cloth. It is especially designed for measuring the length of cloth unwound from a roll. The



THE "ROCO" CLOTH MEASURING MACHINE.

A very large production is obtained from this machine, the speed being 225 feet per minute for 2/40s yarn. The machine is simple in construction, the small number of parts resulting in very small cost for repairs. The builders claim that this machine will reduce the cost of gassing from 50 to 75 per cent., saving waste, and with a much lower temperature and an absence of other disagreeable features in the gassing room. Warps are uniformly gassed and finished without streaks. Several of the machines are working in large mills with complete satisfaction. Further information can be obtained on application to the builders.

wheel shown in the illustration rests on the roll of cloth and is made of any desired size, 12, 20 or 36 inches. It is connected by a flexible shaft with the counter as shown, and the movement of the cloth revolves the wheel by friction so that the figures in the counter indicate the length of cloth unwound from the roll. The wheel and counter are suspended on a rod which swings on a shaft, so that as the roll of cloth grows smaller the wheel presses by gravity against the cloth and continues to indicate the length unwound. This measuring device has been in successful use in bleacheries, being very

convenient for indicating the production of various machines.

HYDRAULIC LABOR-SAVING MACHINE.

Those attending the meeting of the Southern Textile Association held at Columbia, S. C., were much interested in the practical demonstration of a new labor-saving hydraulic machine showing a decided improvement over the present methods in use for similar work. The machine on exhibition was at once purchased by the Olympia Cotton Mills for their machine shop and other orders have been placed for these machines by leading mills.

By referring to the cuts it will be seen that in this original machine are combined a high pressure forcing machine, a hydraulic engine jack and a shaft or lap pin straightener all in one. Fig. 1 shows the machine itself. The base, adjustable yoke, oil reservoir and pump stand are composed of best grade casting. The vertical uprights, pump cylinder and plunger rod are of cold rolled steel shafting. The pump packing nut is of turned brass. The tubing conducting the pressure medium from pump to machine cylinder is of specially constructed flexible steel capable of withstanding high pressures and at the same time being absolutely pliable. The gauge which indicates the pressure in tons and pounds to square inch is of standard make. The valves, checks and fittings are all standard. The forcing ram is packed with specially designed packing capable of withstanding high pressures. In

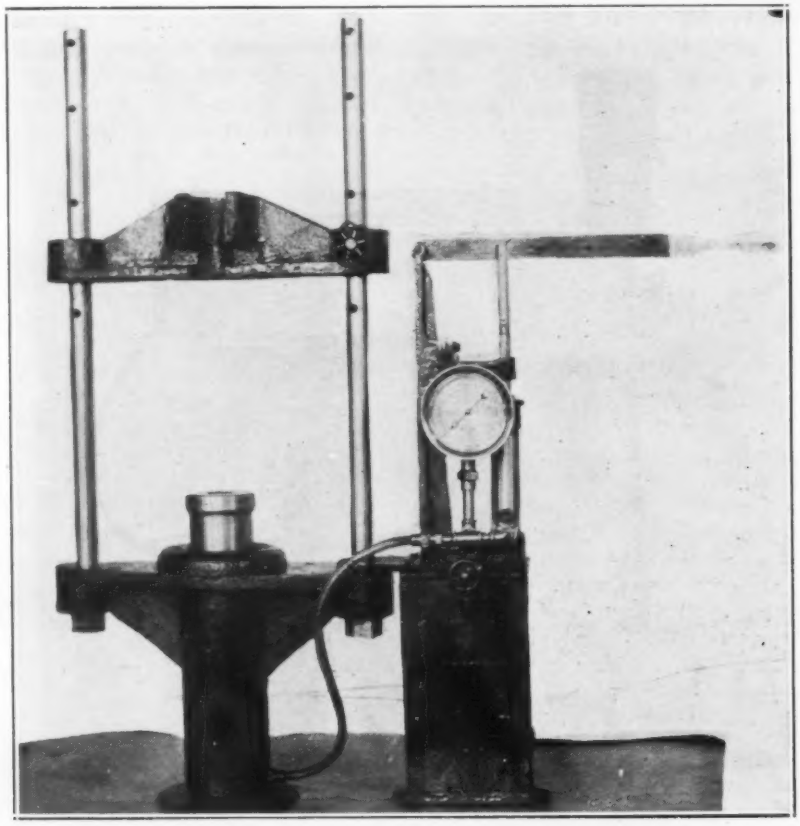


FIG. I.

center of forcing ram is bored a round hole extending to within one inch of its entire length. In forcing out a broken loom crank shaft, bushing or other tight fitting part, a steel plunger is dropped into hole above referred to. This plunger forces the work out through recess in adjustable yoke as ram of machine rises, as may be readily seen by referring to cuts. In forcing on new loom crank, off-set bushing, etc., the plunger is removed, leaving hollow recess to take shaft enter as piston of ram rises.

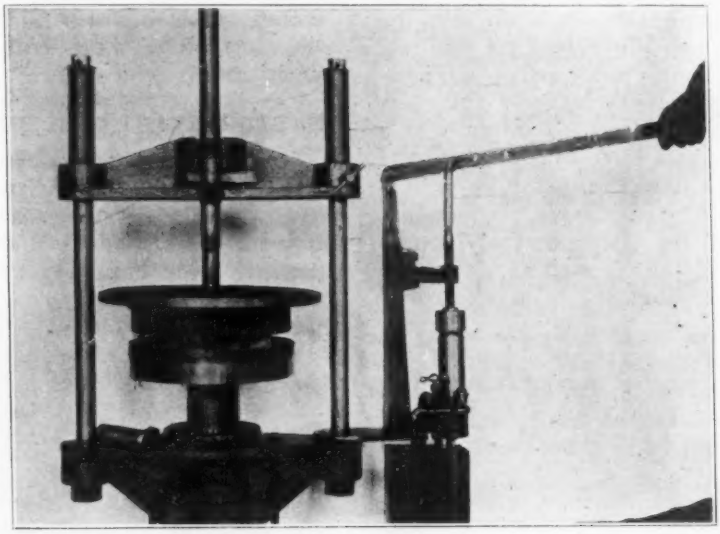


FIG. 2.

In operating the machine the by-pass valve shown at front of oil reservoir is closed, the work to be forced is placed on ram, the adjustable yoke is brought down to

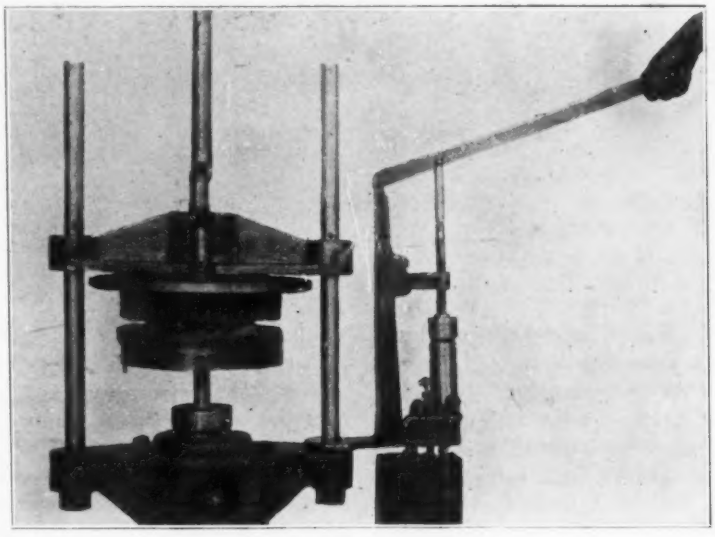


FIG 3.

the desired position and locked by a turn of the hand wheel shown at right hand side of same. Steel keys are now inserted above the yoke through holes cut in the steel uprights. The pump is operated, the ram rapidly rises, forcing the work under high pressure to the exact point desired. The operator may relieve the pressure instantly by a turn of the by-pass valve with the left hand while the right is still on pump lever. On the opening of by-pass valve, the pressure being relieved, the piston of ram falls by gravity, forcing the oil used as a pressure medium back through the by-pass to reservoir.

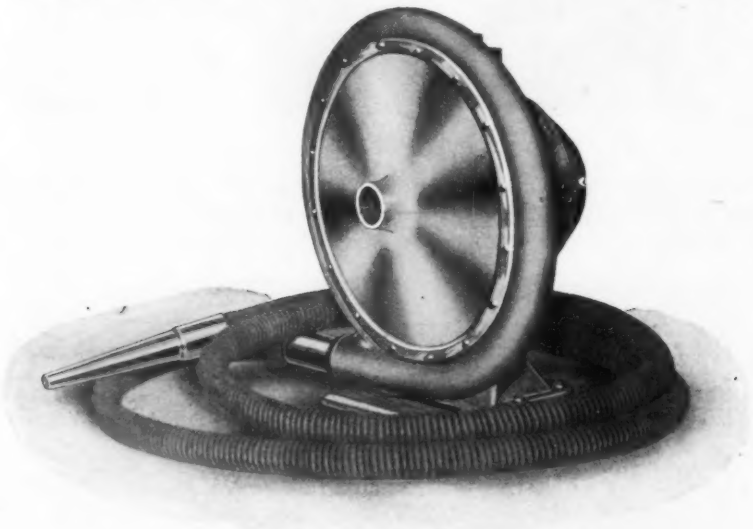
Fig. 2 shows the method of using the machine for forcing on a loom crank. Fig. 3 shows the method of using the machine for forcing off a loom crank.

Dozens of other purposes for which the machine can be used to advantage will occur to a mill man, such as bushing pulleys, as an engine jack and all sorts of work of that nature.

The machine is the invention of J. M. Gamewell of the Arkwright Mills, Spartansburg, S. C., and J. A. Kirby of the same place. It is for sale by the leading machine and supply dealers. A machine will be exhibited at the Textile Exhibition in Boston during the week of April 25 in the space of the Stafford Loom Works, where Mr. Gamewell expects to be present himself to show it in operation.

THE STURTEVANT DUST BLOWING SET.

For the blowing out of dirt and dust from machinery and from around motors, switchboards, shelving and other places difficult or dangerous of access, the B. F. Sturtevant Company, Hyde Park, Mass., has brought out a new portable dust blowing set. The device is electrically driven and weighs only 55 pounds. It is easily portable and is adapted for attachment to lighting sockets,



A DUST BLOWING SET.

so that the range of its usefulness in manufacturing plant or elsewhere is very broad.

While the blower does not give as high a pressure as the large compressed air systems, the larger volume of air accomplishes in most cases the same purpose without the hard, severe blast. There is an additional advantage derived from the larger volume of air in the speed with which the work is accomplished.

The set includes a 12-foot length of 1 1/4-

inch flexible reinforced air hose and a 10-inch tapered polished aluminum nozzle. A 20-foot electric light cord is furnished and in combination with the hose gives a working radius of 32 feet from a lighting socket.

As a vacuum cleaner the set may also be employed for suction cleaning where the dust collector is not necessary. For this work one end of the hose is attached to the inlet of the fan, while the vacuum cleaner tool is fixed to the other. The fan will suck the dust through the wheel and discharge it at the outlet or through a hose connected

THE REILLY FEED WATER HEATER.

thereto which is led out of doors. Bulletins describing these sets can be secured by addressing the Sturtevant Company either at Hyde Park, Mass., or any of their branch offices.

France ranks third in the exports of cotton goods, which in 1908 were valued at $58,859,403. During the same year the country imported 1,238,121 bales of cotton and exported 214,873 bales.

THE REILLY MULTICOIL FEED WATER HEATER.

The Reilly heater, built by the Griscom-Spencer Co., 90 West St., New York, has its heating surface formed of seamless copper tubes, coiled to small radius and secured to headers by ground union joints. A large manhole door is provided in the shell, giving easy access to the interior for inspection to determine that there are no leaks, or for removing and replacing tubes, if necessary. No other tubular heater has ever been constructed with heating surface so formed that a door in the shell would be of the least use. The expanded joints invariably used with other tubular heaters can only be reached through the heads of the heater, making it necessary to pull the whole construction to pieces in order to make good a leak.

The Reilly construction gives the feed water a very long travel and insures its thorough agitation in passing through the tubes and the highest terminal temperature possible with the steam pressure supplied to the heater. Every coil is a spring, so that there are no expansion strains to be transmitted to the heads and cause the joints to work loose. The rapid travel through the tubes prevents the deposit of scale. The result is a heater giving the same high feed temperature as the open heater, but with none of the serious and even dangerous conditions caused by the latter. The open heater fills the feed water with oil from the exhaust steam, the most dangerous impurity which can be put into a steam boiler, and in return offers nothing in its favor but simplicity of construction. The Reilly multicoil heater is as accessible as the open heater, but keeps the feed water pure, giving the same high temperature and is superior to any heater which permits the oil of the exhaust steam to mingle with the feed water.

This heater was first developed for the exacting service of marine steam plants. During voyages covering many days the marine engine must operate without a break and repairs of all kinds must be left until the engines are stopped upon arrival in port. As the stops are short, it is necessary to

have all parts of the ship's steam plant so constructed as to allow of the quickest possible inspection and of such repairs as may be necessary.

Marine feed water heaters are operated like marine boilers at pressures much higher than are common in stationary plants and the feed pumps are so driven as to cause severe strains, often much in excess of the regular feed pressure. For these reasons a construction which will produce the highest possible feed temperature, in an apparatus occupying the least space, of the smallest

THE REILLY HEATER.

weight and accessible for repairs in the highest possible degree, was absolutely essential. The Reilly heater was brought out for this purpose and over 1,000,000 h. p. installed on shipboard, with the result that this heater has practically monopolized the marine field in America. The larger portion of the ocean liners regularly entering New York Harbor are equipped with Reilly heaters. The advantages of the construction were so evident that the design was modified to adapt the heater to stationary plant service.

The production of Sea Island cotton in 1908 was 93,858 bales, equivalent to 36,538,239 pounds. Nearly 27 per cent. of the crop was exported.

SPLIT LAPS IN COTTON CARDING.

Editor Textile World Record:

I have been troubled for some time with split laps in carding and have discovered a very simple device for overcoming this annoying defect. As is well known, split laps are often caused by excessive drafts on the bottom screw, sometimes by too much waste and frequently by damp weather which causes the laps to stick together. I overcame this trouble by taking out the draw plate in front of the screen and boring across the back 2 inches from the edge, a straight line of holes, 3/16 inch in diameter and 2 1/2 inches apart. I made staples of 3/16-inch steel wire, 20 1/2 inches long and 2 1/2 inches wide and squared the backs so they would fit flush. I then pushed them through the holes in the draw plate and bent them about one inch from their ends, letting them set, in their curved position, about 3/4 of an inch above the calender roll. Filing the rough edges from the ends of the staples completed the work and gave me the device wanted.

On starting the card I had to push the first cotton through with my hands, but afterwards the work ran along very smoothly and I have had no trouble since with split laps. The only thing out of the ordinary to be noticed on the laps is the slight crease it leaves which in no way injures them. The attachment allows 25 to 40 per cent. increase in draft and makes it possible to use 60 per cent. of the waste.

Norwich.

The imports of cotton goods into the United States during 1909 was $62,010,286, compared with $73,704,636 in 1907 and $41,296,239 in 1900.

In 1908 Italy imported 911,573 bales of cotton and exported 46,164 bales, while the value of the imports of cotton goods amounted to $7,615,558.

The value of all manufactured products in the United States returned at the census of 1905 was nearly $15,000,000,000. Of this amount, textiles constituted $1,200,000,000 and cotton goods $450,000,000.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

(Other Mill News on Pages in Advertising Section.)

COTTON.

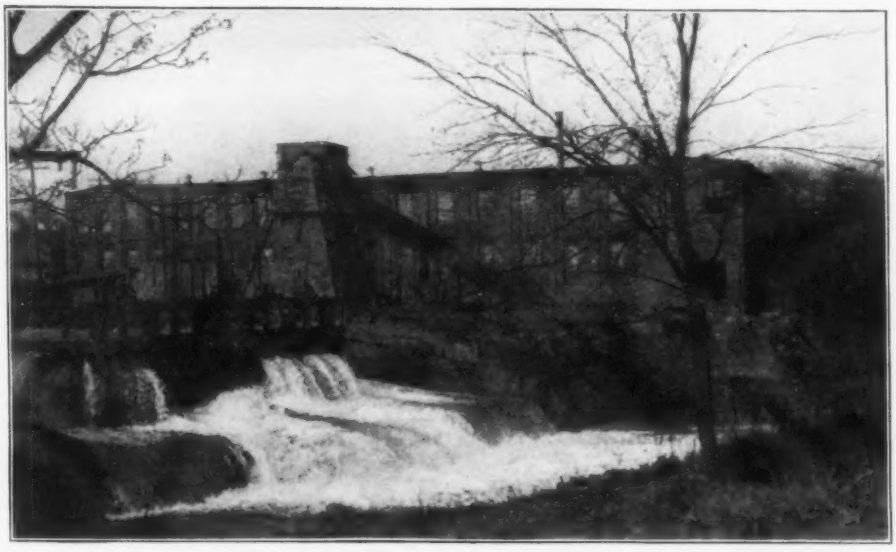
New Mills.

*Alabama, Jacksonville. The new Verlina Mills have begun manufacturing and are making Turkish towels and fancy cotton weaves. Two hundred looms have been installed and are being operated by electric power in connection with the Ide Cotton Mills, whose yarns they use.

Georgia, Villa Rica. The capital stock of the Villa Rica Cotton Oil Mill Co. has been increased from $20,000 to $150,000, and they will build the cotton mill in which J. T. Fuller was reported interested, installing 2,500 spindles. B. F. Floyd is general manager. In building the mill provision will be made for increasing the capacity to 5,000 spindles in the future.

Georgia, West Point. Nearly a year ago Wm. T. Lang, then of Knoxville, Tenn., began the organization of a new cotton mill company to be known as the Castle Cotton Mills, Ltd., with capital stock of $1,000,000. Last May it was announced he planned to have 100,000 spindles and 2,400 looms. Mr. Lang has now decided to locate at West Point and will build re-enforced concrete buildings with room for 100,000 ring spindles, 10,000 twister spindles and 2,400 looms. C. R. Makepeace & Co. of Providence will prepare plans for the building. For a number of years Mr. Lang was agent of the Brookside Mills of Knoxville. Recently he was elected president and treasurer of the Lang Mfg. Co. at West Point, Ga., with plant at Lanett, Ala., near West Point.

*Massachusetts, New Bedford. The Neild Mfg. Co. has been incorporated with capital stock of $800,000. The company has purchased a site of six acres on the north side of Nash Road, between Church and Bowditch Sts., paying $25,000 for the property. Construction work on buildings will be started at once.



THE GLOBE COTTON MILLS, AUGUSTA, GA.

*Massachusetts, New Bedford. The second of the rumored new mills to be built during 1910 is now a certainty. The name of the new company will be the Quissett Mill. The officers will probably be Wm. M. Butler, president; Edward H. Cook, treasurer, and Thos. F. Glennon, agent. Organization will be completed very soon and the company will be capitalized at $1,000,000. It is proposed to build an 80,000-spindle plant on what is known as the Hastings Wharf property, which will comprise the following buildings: Main building, 4 stories, 150 by 450 ft.; picker house, 4 stories, 98 by 95 ft.; storehouse, 4 stories, 80 by 120 ft.; engine house, 50 by 50 ft.; boiler house,

60 by 60 ft. In addition to these buildings there will be space, it is said, for a weave shed with capacity of 2,000 looms should it be decided at any time to establish a weaving department. For the present, at least, the product will be exclusively fine cotton yarn. The plans are being prepared by C. R. Makepeace of Providence, and are fast nearing completion.

*North Carolina, Chapel Hill. The T. F. Lloyd Mfg. Co., reported incorporated two weeks ago, will build a cotton yarn mill of 10,000-spindle capacity, and has received plans for the building. Construction contracts will be awarded at once. T. F. Lloyd and Isaac W. Pritchard, connected with the Alberta Cotton Mill and the Blanch Hosiery Mills, before these companies were absorbed by the Durham Hosiery Mills, control the new company.

*North Carolina, High Point. The Southern Power Co. is interested in the Pickett Cotton Mills to be located here, with equipment of 12,000 spindles and 300 looms. Robt. L. Steele of Rockingham will probably be president, W. P. Pickett, vice-president and F. N. Pickett, secretary and treasurer.

*North Carolina, Lincolnton. The Saxony Spinning Co. has completed its plant and begun manufacturing. 5,760 spindles and preparatory machinery have been installed, leaving about 3,000 spindles to be added to complete the full equipment. Machinery is driven from a 250-h. p. steam plant. Edward Love is president; W. T. Love, vice-president, and J. Lee Love, secretary and treasurer.

*North Carolina, North Wilkesboro. Plans have been completed for the proposed plant of the Finwin Cotton Mill, incorporated last December. They will construct a 3,000-spindle cotton yarn mill and expend about $70,000 for this purpose. T. B. Finley, North Wilkesboro and J. Locke Erwin, Concord, N. C., control this company.

*North Carolina, Thomasville. From 7,000 to 8,000 spindles will comprise the initial equipment of the Amazon Cotton Mills, and they hope to have equipment installed by the middle of the summer.

Oklahoma, Muscogee. W. D. McNeill and John A. Seigler, North Carolina cotton mill men, have accepted the offer of the Muskogee Commercial Club of a bonus of 30 acres of land and $50,000 cash to build and operate a 10,000-spindle cotton mill in Muscogee. It is announced they will begin work on plans at once.

*South Carolina, Columbia. Plans for buildings and equipment of the Glencoe Cotton Mill have been completed and contracts will be awarded about April 1. Five thousand spindles to be driven by electric power will be installed for making cotton twines and warps. As noted some time ago, the capital stock is $100,000. T. Heber Wannamaker of Orangeburg is president, treasurer and buyer, and George N. Berry is vice-president.

*South Carolina, Easley. It is reported the new Alice Mill has placed contracts for equipment.

*South Carolina, Great Falls. It is understood the new Republic Cotton Mill will soon begin preliminary construction work on two additional mills with about 75,000-spindles capacity. They are proceeding steadily with the erection of the first unit, which will have 25,000 spindles and 500 to 1,000 looms.

*South Carolina, Greenwood. Arrangements are being made for the construction of buildings for the Panola Cotton Mill, reported incorporated several weeks ago. The capital stock is $300,000. A mill of 10,000 spindles and 300 looms is planned. F. S. Evans is president.

*Tennessee, Johnson City. It is very likely a cotton mill will be located here. Matters are not as yet shaped so that a report can be made, but there is every prospect that the project will be successful. D. D. Little of Spartanburg, S. C., is interested. Mr. Little is president and treasurer of the Marion Mfg. Co., Marion, N. C.

Enlargements and Improvements.

Alabama, Florence. The Ashcraft Cotton Mills contemplate installing a producer-gas engine power plant, and are interested in information relative to this equipment.

*Alabama, Huntsville. It has been decided to make a larger addition to the Lowe Mfg. Co. than was originally planned, and instead of 200 new looms there will be 300 looms installed. The foundation of building as originally planned is completed, but is being changed to 80 by 144 ft., instead of 80 by 96 ft.

Alabama, Spigner Station. The Alabama Cotton Mills will spend about $40,000 to improve their real estate and about $25,000 for improving the equipment, including changing from steam to electric power.

*Connecticut, Willimantic. The American Thread Co. has awarded contract for a 3-story brick bleachery, 76 by 220 ft. The first floor will be used for bleaching, the second story for drying, and the third floor for general manufacturing. Ground will be broken in a few days and the work of building will be pushed forward with all possible dispatch.

Maine, Biddeford. Reports that the Pepperell Mfg. Co. will erect a new power station are misleading, as only a very small addition to the present power plant is contemplated.

Massachusetts, Adams. Contract for the addition to the jacquard weave shed of the Renfrew Mfg. Co. has been awarded to the H. C. Wood Co. of North Adams. It will be 40 by 47 ft., 1 story high.

*Massachusetts, Adamsdale. Machinery for the improvement to the plant of the Spencer Yarn Co. has all been contracted for and most of it has been installed.

*Massachusetts, Chicopee Falls. The Chicopee Mfg. Co. has awarded contract for the proposed new weave shed. The building will be of reenforced concrete construction, 1 story high, 252 by 140 ft., with saw-tooth roof, and will have space for 650 wide looms. Construction work will be started early in the spring.

*Massachusetts, Clinton. Although preliminary construction work has been started on the new mill for the Lancaster Mills, the company is as yet undecided what the equipment will be. The building will be 5 stories high, 400 by 120 ft.

*Massachusetts, Fall River. The addition to No. 7 Mill of the Fall River Iron Works Co. is nearing completion. It is of brick construction, 4 stories high, 147 by 100 ft.

Massachusetts, Lawrence. The capital stock of the Lawrence Duck Co. will be increased from $300,000 to $400,000. It is understood an enlargement will be made as they purchased additional land suitable for manufacturing last November and it was rumored at that time an addition would be built.

*Massachusetts, Lowell. Permits have been issued to the Massachusetts Cotton Mills to build the proposed additions, and work of clearing the land to be occupied is in progress. The new mill will cost about $54,000. An additional story to one of the old mills will cost about $21,000. The new mill will be about 150 ft. long and 94 ft. wide, 5 stories high, and will be equipped as a picker and carding mill. The additional story to one of the other mills will be 250 ft. long and 94 ft. wide, this making the building 5 stories high.

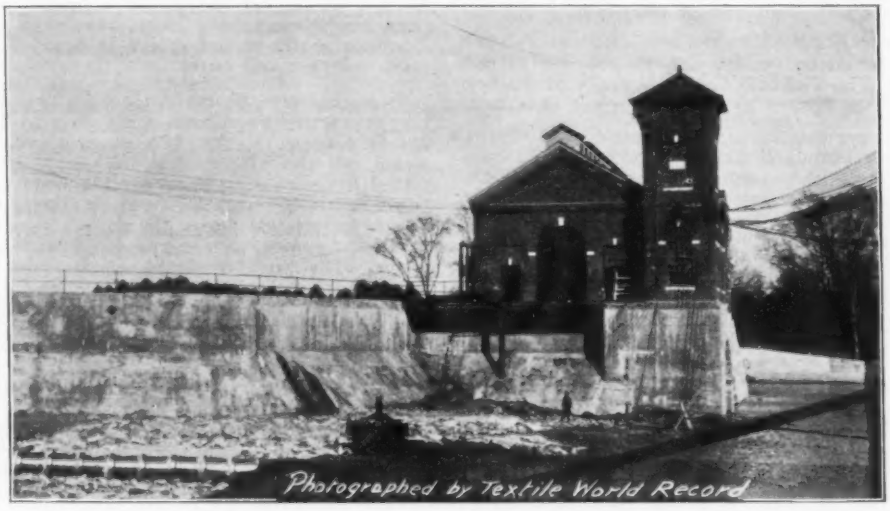
Massachusetts, New Bedford. At a meeting of the Board of Directors of the Bristol Mfg. Co. it was decided to issue $200,000 in common stock and $200,000 in five per cent. preferred stock. The proceeds will be used for improvements and a slight increase in the equipment.

*Mississippi, Natchez. The previously reported changes at the Natchez Cotton Mills include the addition of new machinery for the manufacture of print cloths, which will cost about $20,000.

*Massachusetts, Three Rivers. Work will soon be started on the new dam and hydro-electric power plant for the Palmer Mill of the Otis Co.

New York, New York Mills. The New York Mills have begun the erection of a new bleachery, 2 stories high and 175 ft. square, at No. 1 Mill. It will be completed about June 1.

North Carolina, Jonesboro. A 100-foot addition will be built to the present mill of the Leeco Cotton Mills Co., and the whole building made two stories high. About 2,000 spindles and 100 looms are to be added. The plant has been shut down and will be idle until the completion of the new building, which necessitates tearing away a large wooden structure that has enclosed the greater part of its machinery.



THE ELECTRIC POWER PLANT OF THE WEST POINT MFG. CO., LANGDALE, ALA., L. LANIER, JR., AGENT.

*North Carolina, Monroe. The recent increase in the capital stock of the Monroe Cotton Mills from $145,000 to $175,000 is to cover improvements which have been completed. They have built a new cloth room and installed 42 wide looms in part of the weave room, formerly occupied by the old cloth room.

North Carolina, Mooresville. To make room for looms, the office of Mill No. 2 of the Mooresville Cotton Mills has been moved into a temporary building while a new office building is being constructed.

North Carolina, Mt. Holly. The Nims Mfg. Co. will build an addition during the spring and summer. The enlargement will occupy the site of the present power plant, which is no longer needed on account of the installation of electric power.

*North Carolina, Rockingham. The Hannah Pickett Mills will soon award contract for the

erection of their proposed weave shed. The building will be 100 by 260 ft. and it has been decided to equip it with 400 looms. This will require all their present production of yarns.

WOOLEN.

New Mills.

*Massachusetts, Franklin. The Franklin Felt Co. is expected to begin manufacturing within two weeks. They are now making up samples. The plant has been completed and when in full operation will employ about 100 hands.

*Rhode Island, Harrisville. Construction work has been started on the new $75,000 woolen mill for the Wm. Tinkham Co. It is expected the new mill will be finshed by July 1. Details have been given.

*Rhode Island, Woonsocket. Contract has been awarded for the construction of the first of the buildings for the Samoset Worsted Mills to the Torrington Building Co., Torrington, Conn. Plans and specifications have been prepared by Charles T. Main, mill-engineer and architect, of Boston. The buildings include a main building, 158 by 115 ft., 4 floors, with a 1-story office building, 24 by 45 ft., brick and slow burning mill construction, steel beams and tar and gravel roof.

Enlargements and Improvements.

*Canada, Ontario, Campbellford. Forty looms will be installed in the new building of the Trent Valley Woolen Mfg. Co., Ltd. Part of the new building is to be used for storage. James Rodger is president of the company and S. J. Moore, manager.

*Connecticut, Elmville. Additional equipment installed by the Thistle Worsted Co. comprises 18 second hand looms purchased of the American Woolen Co.

Connecticut, Talcottville. Talcott Bros. are to build an addition on the west side of their mill this spring. The addition will be 80 by 32 ft., 2 stories high, and will provide more room for the carding and spinning departments, which are to be increased by the installation of new machinery. At present these departments are unable to keep up with the weaving room, and the proposed addition will balance all departments.

*Connecticut, Winnipauk. Changes at the Norwalk Mills Co. comprise the replacing of 19 old looms with 19 second hand looms.

Illinois, Chicago. A large addition is being built for The Western Felt Works, which will nearly double the present capacity. Recently they installed three new cards and a wool picker.

*Massachusetts, Franklin. The addition to the Hayward Mills, which was started last October, is completed and they are installing three new mules and three sets of cards. An additional set will be added in the spring.

*Massachusetts, Lawrence. Excavations for foundations of the new worsted mill of the Pacific Mills are being made on land already cleared and work has been started on tearing down other dwelling houses, which stand on land to be occupied by the new mill. It is said the Pacific Mills have made arrangements for a large plant in South Lawrence, covering about 17 acres of land owned by the company, also that plans have been prepared for the new print works to be erected just below the Wood Worsted Mills.

*Massachusetts, Methuen. As noted previously, the Marshall Worsted Co. of Lawrence has installed 24 looms in the lower floor of the Methuen Co.'s building, but this is not a branch plant as they are moving here from Lawrence. Bethel Booth is president and Alfred E. Stafford, treasurer, manager and buyer.

*Massachusetts, North Andover. The installation of worsted machinery in the Osgood Mills of M. T. Stevens & Sons Co. is practically completed, all the old woolen machinery being replaced by new worsted yarn machinery. A new power house has been built and machinery will be driven by electric power developed from a new 700 h. p. engine, direct connected with a generator. The yarns produced will be sent to the different mills of M. T. Stevens & Sons Co. to be woven.

Massachusetts, South Acton. An addition, 60 by 100 ft., is being built to the plant of the South Acton Woolen Co. The new building will be used for carding and garnetting departments.

Massachusetts, South Royalston. It is reported the American Woolen Co. will build another addition to the Whitney Mill, to be equipped with looms.

*Michigan, Detroit. The Armstrong Woolen Co. is building a new mill which will greatly increase the capacity. Recently the capital stock was increased from $25,000 to $60,000 to finance this enlargement.

*New York, Fulton. Carding and drawing machinery is being operated in the new worsted yarn mill of the American Woolen Co. The installation of all the new equipment has not been completed, however.

New York, Jamestown. The Cleveland Worsted Mills Co., of Cleveland, Ohio, has purchased the Meadow Brook Mills of Wm. Broadhead & Sons, including buildings, combing, carding and wool-washing machinery, and will operate it under the name of the Odsonia Worsted Mills. The drawing and spinning machinery will be removed by Wm. Broadhead & Sons so the Cleveland Worsted Co. can take possession by June 1 and install new machinery, including 7 worsted cards, 6 combs and 10,000 spindles for making worsted yarns on the French and Bradford systems. They will also install 100 looms.

Pennsylvania, Philadelphia. At a recent meeting of the stockholders of Jonathan Ring & Son, Inc., Wilson H. Brown was elected president and Stanley R. Stager, treasurer, and will in the future conduct the business of the concern. They are manufacturers of woolen and merino knitting

yarns, operating 7 sets and 8,112 spindles at 1759 N. Hancock St., where many changes and improvements are being made to the establishment.

Pennsylvania, Philadelphia. The Pearce & England Co., owners of the Anchor Combing Works, in which they sort, scour and comb wool on commission, with 5 combs, 6 cards, 1 picker and 1 willow, at Hancock and Huntingdon Sts., report operating their plant to its full capacity. They also state that their plant being too small to accommodate the amount of business which they are receiving, will necessitate their removal, within a year, to other and larger quarters. They are at present looking for a larger building into which to remove and double the size of their plant.

Pennsylvania, Philadelphia. The Hall-Taylor Company, manufacturers of men's wear and dress goods on 30 broad looms at 2739 N. Fairhill St., and a branch plant at the N. E. corner of Mutter and Lehigh Ave., where they occupy two floors, report that they have removed their office to the latter address, where they will also install machinery for dry finishing their product. They report having sufficient orders on hand to keep them running both day and night.

Pennsylvania, Philadelphia. On March 3 bids were invited for a new addition to the large plant of the Hardwick & Magee Co. (formerly Ivins, Dietz & Metzger Co.), manufacturers of carpets at Lehigh Ave. and Marshall Sts. The buildings to be erected will be on Marshall St., between Huntingdon St. and Lehigh Ave., adjoining their present plant, and will have a frontage of 165 ft. and a depth of 50 ft. and will be five stories in height.

SILK.

New Mills.

New Jersey, Paterson. E. Vilek has leased space at 93 River St. in which he will install 12 looms for making broad silks.

*Pennsylvania, Northampton. The Wyandotte Silk Co., recently incorporated with capital stock of $50,000, as noted, will erect a 1-story brick silk mill at Fourth and Williams Sts., Northampton Heights. They expect to give employment to 100 hands.

*Pennsylvania, Reading. The new company which is equipping the building on Moss St., recently vacated by the Steiner & Talcott Silk Co., with silk machinery, will be known as the Reading Silk Co. Machinery is now being put in position.

*Rhode Island, Westerly. It is expected the new silk mill of Wm. Washburn, located on the second floor of the Stone Mill on Main St., will be in operation by March 15.

Enlargements and Improvements.

Connecticut, Norwich. J. B. Martin Co. are putting individual motors on all their looms and expect eventually to change the entire plant to electric drive.

New Jersey, Paterson. Howard & Burke have moved their throwing plant from Mill St. to Scranton, Pa. They expect to enlarge after they get started again.

New Jersey, Paterson. The Expert Silk Co. is removing from the Barnert Mill to the new Strange Mill, where they have installed 50 new looms.

New Jersey, Paterson. Wolff & Silber have leased space in the Harding Mill, lately vacated by the Crescent Silk Co., and will add 20 looms.

New Jersey, Paterson. The Commercial Silk Co., 93 River St., has moved to the Harding Mill on Straight St., and will add 10 broad silk looms.

*New Jersey, Paterson. The Cosgrove & Sons Silk Co., reported last week as incorporated to continue the business of James Cosgrove, contemplate building a small addition this spring in which six or eight new looms will be installed.

*New York, Newburgh. Construction work will be started right away on the new 2-story mill to be built for the Newburgh Silk Co. as they need an increase in production. The capacity of the new mill is to be 64 looms, but this number will not be added at first, probably 15 to 20 looms being the first installment. It is expected the new mill will be completed and machinery in operation by August 1. Broad silks only are manufactured.

New York, Oswego. It is reported that Julius Kayser & Co. will begin building an addition to their local plant in June. The main mill and office is at Brooklyn, N. Y.

*Pennsylvania, Philadelphia. Work will be started immediately on the new three-story building for the Frierberger-Aaron Manufacturing Co., located at 18th and Courtland Sts., Wayne Junction, which will be 350 by 644 ft., and cost in the neighborhood of $75,000.

*Pennsylvania, Philadelphia. Goodman, Loeb & Co. expect to move to their new mill at 13th and Callowhill Sts. about July 1.

*Pennsylvania, Weatherly. The Weatherly Silk Mfg. Co. has begun manufacturing. This concern combines the Manhattan Silk Co. of Paterson, N. J., and the Onoko Mfg. Co. of this place. It was reported some time ago a large mill would be built as an addition to the present plant.

Mills Shutting Down.

New Jersey, Paterson. Owing to dullness in its line the J. M. Potts Silk Co. has closed its plant.

MISCELLANEOUS.

Canada, Montreal. The Moulton Mfg. Co. has been incorporated with capital stock of $90,000 to take over the business of Moulton & Co., braid and cord manufacturers, with plant located at 236 Craig St. It is understood the plant will be enlarged.

(Mill News Continued on pages in Advertising Section.)

Personals.

A. L. Remington has accepted the position as overseer of dyeing at the Wuskanut Mills, Farnumsville, Mass. He comes from Hadden Heights, N. J., and succeeds M. H. McEvoy.

Edward P. O'Brien, who was employed at East Boston, Mass., and later with the Bigelow Carpet Company, Lowell, Mass., has accepted a position with the East Weymouth Wool Scouring Company, East Weymouth, Mass.

O. Comstock, overseer of finishing at the Great Falls Woolen Company, Somersworth, N. H., has severed his connection with that company, and is succeeded by Ernest Jones, who held the position of second hand.

William Owen has accepted the position as overseer of carding at the Allen Woolen Mills, Rochester, N. Y. He was formerly employed at the Beaver Dam Woolen Mills, Beaver Dam, Wis., and succeeds Jno. T. Smith.

David Patchell has been appointed superintendent of the Uxbridge Worsted Company, Uxbridge, Mass. He comes from the Cleveland Worsted Mills of Cleveland, O., and succeeds J. J. Deavitt.

Geo. Hunt, designer at the Assawaga Company, Dayville, Conn., has severed his connection with that company to accept the position of assistant superintendent at the Vassalboro Mills, North Vassalboro, Me.

John Kress, overseer of dyeing at the Springville Mills, Hockanum Company, Rockville, Conn., has severed his connection with that company. Previous to accepting the position with the Springville Mills he was employed at the American Mills Company, Rockville, Conn., for several years.

Wm. N. Kimball, for the past ten years superintendent of the Social and Nourse Mills, of the Manville Company, Woonsocket, R. I., has been appointed general agent of the three large plants at Woonsocket, the Social, Nourse and Globe Mills, and also the large plant at Manville, R. I. Mr. Kimball has appointed Frederick Roach, the assistant superintendent at the Manville Company to the position of superintendent of that plant. Edward H. Houghton, superintendent of the Globe Mills for ten years, has been transferred to the position of superintendent of the Social and Nourse Mills. Allen Arey, Jr., overseer of carding at the Social Mills, has been appointed superintendent of the Globe Mills.

John Webendorfer, overseer at the Waverly Woolen Mills, Pittsfield, Me., has been appointed overseer of weaving at the Anderson Mills, American Woolen Company, Skowhegan, Me.

W. C. Damon, superintendent of the R. I. Worsted Company, Stafford Springs, Conn., has severed his connection with that company.

Jos. Glennon, in charge of the fulling department at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass., has severed his connection with that company, and returned to his home in Maynard, Mass.

Geo. F. Greenwood, overseer of dyeing at the Merrimack Mfg. Company, Lowell, Mass., has resigned.

Elmer Gordon, for several years boss weaver at the Anderson Mills, American Woolen Company, Skowhegan, Me., has severed his connection with that company.

Paul Reed has accepted the position as superintendent of the Barnaby Mfg. Company, Fall River, Mass. He succeeds Eben C. Willey.

J. D. Price, overseer of dyeing at the Edward T. Steel & Company, Bristol, Pa., has severed his connection with that company.

Wm. Harrup, who recently accepted a position as superintendent at the Rotch Mills, New Bedford, Mass., and who has been superintendent of the Nemasket Mills, Taunton, Mass., was called to the office of the Nemasket Mills of Taunton where he found his former overseers assembled. He was presented with a handsome gold watch, suitably engraved, as a testimony of the esteem in which he was held by the overseers. Patrick Farrell, overseer of the card room, made the presentation speech. Mr. Harrup responded in a few well chosen words.

W. L. Campbell has been appointed assistant manager of the Vance Mills, Salisbury, N. C.

E. F. Carter has accepted the position as assistant superintendent of the Cannon Mills, Kannapolis, N. C.

T. L. Saunders, Jr., has accepted the position as overseer of carding and spinning at the Patterson Mills, Kannapolis, N. C. He comes from the Anchor Mills, Huntersville, N. C., where he held a similar position.

Henry Aiken has accepted the position as overseer of weaving, slashing, warping and spooling with the Beaver Dam Mills, Edgefield, S. C. He comes from Warrenville, S. C.

H. B. McAbee has been appointed overseer of spinning, spooling and winding with the Iceman Mills, McColl, S. C. He formerly held the position of overseer of spinning at the Holt-Williamson Mills, Fayetteville, N. C.

W. Stevenson, superintendent of the Chatham Mfg. Company, Elkin, N. C., has resigned to accept a similar position with the Spray Woolen Mills, of Spray, N. C.

J. E. Merchant has accepted the position as overseer of the cloth room at the Capital City Mills, Columbia, S. C. He comes from the Brandon Mills, Greenville, S. C.

John A. Davis, boss weaver at the Delta Cot-

ton Mills, McComb City, Miss., has accepted a position as overseer of the cloth room at the Magnolia Cotton Mills, Magnolia, Miss.

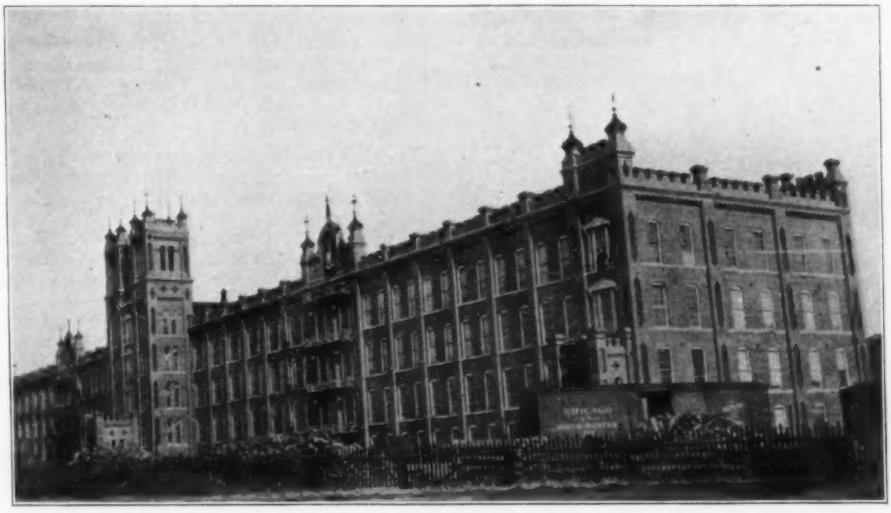
V. M. Johnson has been appointed superintendent of the Merrimack Mfg. Company, Huntsville, Ala. He formerly held a similar position with the Aragon Cotton Mills.

O. K. King has accepted the position as overseer of carding and spinning at the Cowikee Cotton Mills, Eufaula, Ala.

as designer at the Peace Dale Mfg. Company, Peace Dale, R. I.

Thomas Leonard, overseer of ring spinning at the Luther Mfg. Company, Fall River, Mass., has resigned to accept a similar position with the Samoset Mfg. Company, Valley Falls, R. I.

Peter J. Hinds has accepted the position as overseer of spinning and spooling with the American Thread Company, Holyoke, Mass. He comes from Newark, N. J.



THE SIBLEY MFG. CO.'S PLANT, AUGUSTA, GA.

John W. Gledhill has accepted the position as overseer of finishing at the Ounegan Mills, Old Town, Me. He comes from Skowhegan, Me.

James Parkin has accepted the position of designer at the Reliance Worsted Company, Norwich, Conn. He was formerly employed at Harrisville, R. I.

Chas. E. Matevier has accepted the position as overseer of carding at the United Woolen Company, Northboro, Mass. He was formerly employed at Medway, Mass.

E. E. Stedman has accepted the position as overseer of dressing at the Sheridan Woolen Mills, Ashuelot, N. H. He comes from Westerly, R. I.

F. A. Hawkinson has been appointed overseer of finishing at the Parkhill Mfg. Company, Fitchburg, Mass.

Arthur Rausch has accepted the position as overseer of finishing at the Saranac Mills, Blackstone, Mass. He succeeds P. T. Donahue.

M. G. Enstein, manager of the worsted department at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass., has resigned to accept a position

Arthur T. Lyman succeeds the late Wm. C. Lovering as president of the Whittenton Mfg. Company, Taunton, Mass.

Thomas Frazier has accepted the position as overseer of dyeing at the Park Woolen Mills, Rossville, Ga.

D. J. Brown has accepted the position as superintendent of the Park Woolen Mills, Rossville, Ga. He was formerly engaged with James Irving & Sons, Chester, Pa. He went to Rossville, Ga., from the Nashville Woolen Mills, Nashville, Tenn., his son having taken the position at Nashville.

James C. Cameron has been appointed designer at the Hockanum Mills Company, Rockville, Conn. He comes from the Sherriff Worsted Company, Fitchburg, Mass.

Walter Stolworthy, overseer of the wool sorting department at the Riverside Mills, Providence, R. I., has resigned to accept a similar position with the new Ayer Mill, Lawrence, Mass. He is succeeded at the Riverside Mill by his brother, Charles Stolworthy.

J. Harvey Merrill has been appointed superintendent of the R. I. Worsted Company, Stafford

Springs, Conn., to succeed W. C. Damon. He was formerly employed at the Namquit Mills, Bristol, R. I.

James Hilton, superintendent of the Basch & Greenfield Company, Newark, N. J., has severed his connection with that company.

Charles A. Praray, superintendent of the Holmes Mill, New Bedford, Mass., has resigned to become head of the architectural firm of Praray & Sons, who will locate an office at New Bedford.

Allen Arey, Jr., who assumed the duties of superintendent of the Globe Mills, Woonsocket, R. I., of the Manville Company, was tendered a surprise Saturday, March 12. He was presented with a purse of gold, a gift of the employes of the Nourse Mills of the Manville Company. John Reiley, assistant foreman at the Nourse Mills, made the presentation speech. Mr. Arey responded in a few well chosen words.

Andrew Fraser, overseer of carding at Mayo & Sons' mill, Foxcroft, Me., has severed his connection with that company and is succeeded by Harry Balcomb.

W. P. Barnes has been appointed superintendent of the Griffin Mfg. Company, Griffin, Ga.

J. L. Batson has been appointed overseer of carding at the Cedartown Cotton Mills, Cedartown, Ga.

W. C. Bobo has accepted the position as superintendent of the Greers Mfg. Company, Greers, S. C. He comes from the Apalache Mills, of Arlington, S. C.

Alvin Hall has been promoted to the position of overseer of weaving at the Griffin Mfg. Company, Griffin, Ga.

Chas. Wheeler, superintendent of the Griffin Mfg. Company, Griffin, Ga., has severed his connection with that company.

J. R. Copeland, overseer of weaving at the Griffin Mfg. Company, Griffin, Ga., has resigned to accept a similar position with the Dan River Cotton Mills, Danville, Va.

Thomas R. Morton, overseer of spinning, spooling and warping at the Poulan Cotton Mills, Poulan, Ga., has severed his connection with that company.

Roy L. Barney has accepted the position as superintendent of the Ballard Knitting Company of Norristown, Pa. He was formerly employed at Piqua, Ohio.

John Dalton, overseer of dyeing at the Lippett Mills, Woonsocket, R. I., has resigned and is succeeded by John Know of Oakland, R. I.

A. C. Robinson has accepted the position as overseer of dyeing at the Franklin Felt Company, Franklin, Mass. He was formerly employed at the Merrimac Hat Factory, Amesbury, Mass.

Wm. Bliven has accepted the position as overseer of carding at the Wallace & Smith Blanket Mills, La Porte, Ind.

James E. Donahue has accepted the position as overseer of carding at the Hanover Woolen Mfg. Company, Hanover, Ill. He comes from Franklin, Mass.

Fred Webster has accepted the position as overseer of weaving at the Westbrook Hammock Company, Westbrook, Me. He comes from the Eclipse Mills, No. Adams, Mass.

Leo Conlon, formerly loom fixer at the McGee Mfg. Company, Greenville, S. C., has been promoted to the position of overseer of weaving. He succeeds Wm. A. Watson.

Edward Weissner, superintendent of the Garland Mills, Staffordville, Conn., has severed his connection with that company. He has been engaged by the United Worsted Company of Lowell, Mass., and is succeeded at the Garland Mills by Frank Casey of Danielson, Conn.

J. L. Eadie, who has held the position of styler for the U. S. Bunting and Middlesex Company of Lowell, Mass., has resigned to accept a position as general superintendent of the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass. Mr. Eadie is considered an expert in the manufacture of woolen and worsted goods, having held positions in large mills previous to going to Lowell.

Thomas Stone, overseer of weaving at the Danielson Cotton Company, Danielson, Conn., has resigned to accept a similar position with the Gosnold Mills Company, New Bedford, Mass. He is succeeded by Geo. Parker of New Bedford.

P. J. Harney has accepted the position as overseer of weaving at the Tremont Worsted Company, Methuen, Mass. He comes from the Strathmore Worsted Company, Concord Junction, Mass., and succeeds W. F. Wicks.

Stephen Thompson has accepted the position as overseer of finishing at the Wakefield Mfg. Company, Wakefield, R. I. He comes from Chester, Pa.

A. D. Provost, overseer of dyeing at the Elm Mills Woolen Company, Tilton, N. H., has severed his connection with that company.

T. J. Maney, overseer of dyeing at the Uncasville Mfg. Company, Uncasville, Conn., has severed his connection with that company to accept a similar position with the new Thames Dye & Bleach Works.

Wm. Wells, overseer of dyeing at the Hartford Woolen Company, Hartford, Vt., has resigned to accept a similar position with the Elm Mills, Tilton, N. H. Mr. Wells formerly held this position.

C. H. May, overseer of carding at the Edwards Mfg. Company, Augusta, Me., has severed his connection with that company.

John Hardacre has been appointed overseer of weaving at the Knoxville Woolen Mills, Knoxville, Tenn. He comes from Winooski, Vt., and was formerly employed at C. A. Root & Company, Uxbridge, Mass.

Wm. Nelson has been appointed overseer of weaving at the Edwards Mfg. Company, Augusta, Me.

Andrew Brand has accepted the position as overseer of carding and spinning at the Stafford Worsted Company, Stafford Springs, Conn. He comes from Hudson, Mass.

Frank B. Mackie, overseer in the worsted department at the Hartford Carpet Corporation, Thompsonville, Conn., has resigned to accept a similar position with the Champlain Silk Company's branch mill at Brooklyn, N. Y.

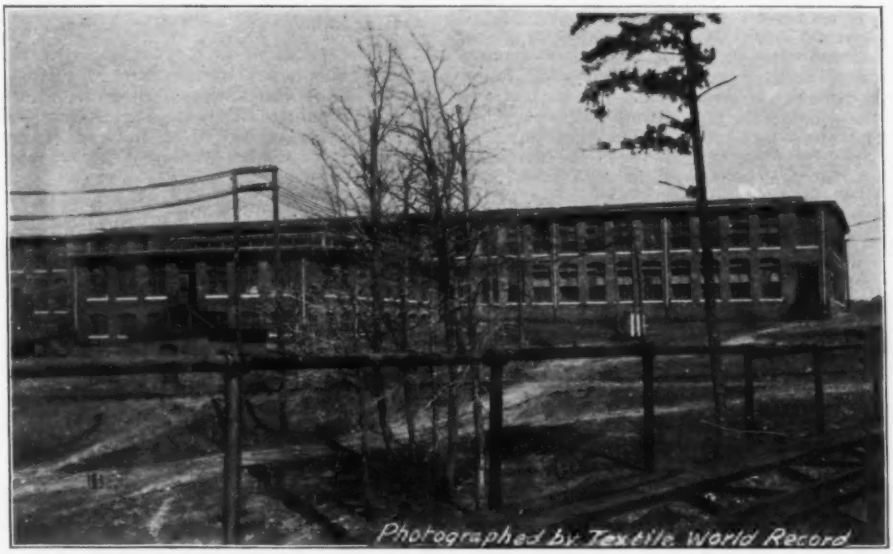
Morgan Haytree, overseer of spinning at the Linwood Mills, Whitinsville, Mass., has severed his connection with that company and is succeeded by Wm. Hawkins of Williamsville, Conn.

C. H. Williams has accepted the position of overseer of weaving at the Waterboro Cotton Mills, Waterboro, S. C., succeeding J. W. Kirkland.

Bruce McNeely has accepted the position in charge of carding and spinning in mills Nos. 2 and 3, Mooresville, N. C., succeeding Sidney White.

Charles Rothwell has accepted the position as superintendent of the new Verlina Mills, Jacksonville, Ala. He comes from Philadelphia, Pa.

R. F. Bagwell has accepted a position as overseer of spinning at the Riverside Mills, Anderson, S. C. He comes from Gainesville, Ga.



THE NEW SPINNING MILL OF THE NEWNAN (GA.), COTTON MILLS. R. A. FIELD, SUPERINTENDENT.

George P. Stacey has accepted the position as overseer of the piping department at the Cocheco Woolen Mfg. Company, Dover, N. H., succeeding Joseph Huneau.

Martin E. Latham, for the past twenty years superintendent of the B. B. & R. Knight's mill at Lippett, R. I., has resigned and is succeeded by Frederick Clark, assistant superintendent at the Natick Mills, Natick, R. I.

George Cogswell, for the past two years superintendent and head of the weaving department at the Beoli Mills, Fitchburg, Mass., has severed his connection with that company.

S. L. Parker, overseer of carding at the Houlton Woolen Mills, Houlton, Me., has resigned to accept a similar position with the Ounegan Mills, American Woolen Company, Old Town, Me.

James Simpson, superintendent of the Lynndon Worsted Company, Falconer, N. Y., has severed his connection with that company and is succeeded by Harry Ingham, who was formerly employed at the Atlantic Mills, Providence, R. I.

Chas. C. Bolen, overseer of weaving at the Dan River Cotton Mills, Danville, Va., has resigned to accept a position with the same mill as assistant superintendent.

Gary M. Lamar has been promoted from boss weaver to superintendent at the Nantucket Mills, Spray, N. C., succeeding the late W. E. Sykes.

J. F. Lookey, superintendent of the Wadesboro Cotton Mills, Wadesboro, N. C., has resigned and is succeeded by M. H. Miles, who has been promoted from the position of overseer in the card room.

J. B. Moore has returned to the Opelika Cotton Mills, Opelika, Ala., in charge of spinning. He formerly held this position.

Thomas Lyons, overseer of finishing at the Weybosset Mills, American Woolen Company, Providence, R. I., has severed his connection with that company to accept a similar position with the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass.

DEATHS.

John Heathcote, of John Heathcote & Son, Providence, R. I., died in that city on March 14, age 77 years. He was born in Manchester, Eng., the son of Luke and Mary Heathcote, and came to Providence when nine years old, and has resided there ever since. He was educated in the Rhode Island schools and at the age of seventeen was apprenticed to learn the machinist trade with the Franklin Foundry & Machine Co. At the close of his apprenticeship he entered the employ of the Corliss & Nightingale Engine Company, where he remained three years. Later he was employed for a number of years by Brown & Sharpe, and later returned to the employ of the Franklin Foundry & Machine Company, where he held a responsible position in one of the departments. In 1866 he started in business on his own account in partnership with James Barbour, under the firm name of Barbour & Heathcote, manufacturing steam, gas and water piping and brass finishings. A few years later he bought the patent rights and began the manufacture of the Winsor tentering and drying machine, and in 1874 purchased his partner's interest in the business. He built up an enviable reputation and his name is favorably identified with cloth tentering and drying machines throughout the textile trade. Mr. Heathcote was married in 1856 to Miss Jane Barbour and had two children. He occupied a prominent position socially, being a member of the Central and Pomham Clubs and was also prominent in Masonic circles.

E. S. Rand, widely known in the textile trade in New England, died suddenly in Lowell on the morning of Wednesday, March 23d. He has represented the Boston Belting Co. for a number of years and had many warm personal friends. He was stricken while going from his home in Lowell to the station and died within a very short time.

Wm. Henry Cooley, of the firm of Smith & Cooley, manufacturers of shoddies and flocks at Stafford Springs, Conn., died at his home recently. He was born in North Deerfield, Mass., and graduated from the high school in that town, later going to Stafford Springs, Conn., where he entered the employ of Wm. Smith as a bookkeeper. In 1870 he became associated with Mr. Smith as a partner and the name was changed to Smith & Cooley. He was a director of the Savings Bank at Stafford Springs and one of the incorporators of the First National Bank. He was born in 1840 and is survived by a widow, one son and one daughter.

James R. Hendrick, a prominent hosiery manufacturer of Germantown, Philadelphia, Pa., and one of the best known residents in that district, died suddenly at his home, 133 Harvey St. He was born in April, 1846, and was 64 years of age. He is survived by a wife, four sons and two daughters.

Frederick Baare, one of the pioneer silk manufacturers of the United States, died at his home in Hazleton, Pa., at the age of 87 years. The remains were taken to New York for cremation. In 1850 he came to this country and embarked in the manufacture of silk goods.

Charles F. Aaron, general sales manager of the New York Leather Belting Co., died last month at his home in Plainfield, N. J., at the age of 43 years. He started at the bottom of the ladder, devoting years to studying by actual work in the factory the tanning and manufacturing ends of the belting business. He was a great believer in the education of the consumer and literature and advertising of this company were based on the idea of giving fullest information to the belt user. Mr. Aaron was connected with many business associations and had been president of the American Supply and Machine Manufacturers' Association. He was prominent in Masonic orders, a Knight Templar and a Shriner.

John S. Cheney of the firm of Cheney Bros., South Manchester, Conn., died at his home of general debility. He was a member of the Connecticut National Guard and served in the Legislature. He was also prominent in Masonic circles.

Robert E. Mathewson, formerly overseer of carding and spinning at White Bros.' Mill, East Jeffrey, N. H., was found unconscious in the yard of his home in Rockport, Mass., and died in a short time after being taken into his home.

Lieutenant Colonel Thomas Talbot, a prominent woolen manufacturer of North Billerica, Mass., and formerly chairman of the Massachusetts Republican Committee, died of pneumonia in New York, Feb. 25, where he had stopped on his return home from Bermuda. He was identified with the State Militia nearly fifteen years, serving in the Infantry Arm on the staff of several governors.

Arnold C. Gardiner, one of the oldest mill men and a life long resident of Riverpoint, R. I., died at his home shortly before five o'clock, Feb. 26. He had been employed in several of the cotton mills in the valley as overseer, having retired some years ago. He is survived by a wife and one son.

Moses D. Garfield, the pioneer of the shuttle eye manufacturers in the United States, died at his home in Millbury, Mass., at the age of 74 years. Shortly after the Civil War, he started the manufacture of shuttle eyes and was the first man to manufacture these successfully in the United States.

Albert E. Smith, formerly a woolen manufacturer of Cherry Valley, Mass., and connected at one time with the Chapel and Valley Mills, died suddenly at his home, March 2, at the age of 66 years.

Horatio Davis, formerly treasurer of the Sewall & Day Cordage Company, Boston, Mass., died at 1 Marlboro St. after an illness of six months. Mr. Davis entered the cordage business after his school days and he soon became treasurer of the company. He was a member of the Somerset County and Essex County, also the Norfolk Hunt Clubs, unmarried, and is survived by three brothers and one sister.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Finishing of Textile Fabrics; by Roberts Beaumont, Professor of Textile Industries at the University of Leeds; D. Van Nostrand Co., New York; 150 illustrations, 257 pages, 8 1/2 by 5.

This work will be welcomed by woolen and worsted manufacturers because of the scarcity of technical books dealing with the finishing of wool and union fabrics. Professor Beaumont begins with a general account of wool fabrics. This is followed by a description of the processes of finishing and the effects aimed at. After these two introductory chapters the processes are taken up in succession, beginning with scouring, which is followed by chapters on the following subjects: Theory of Felting, Fulling and Milling Machinery, Theory of Raising, Raising Machinery and Raising Processes, Cutting, Cropping or Shearing, Lustering Processes and Machinery, Methods of Finishing. The work contains many excellent illustrations of fabrics and machinery. It is written in a clear style and makes a valuable hand book of a branch of wool manufacturing that has heretofore been neglected by writers of textile subjects.

Cotton Mills of Alabama and Georgia; by H. E. Anschultz, Montgomery, Ala.

This handbook gives a complete map of Alabama and Georgia, showing the counties, county seats and the cities, towns and villages to which cotton mills are adjacent. It gives the location of every cotton mill in the two states, and each mill is indicated by a solid square. These squares are numbered, and by referring to the index and the key number, the address, number of spindles, kind of power used and consumption of cotton per year in bales can be ascertained. The map also shows the exact location of all water powers, both in operation or available. This map has been designed to show the things that are needed by the mill owner and operator, cotton broker, cotton buyer, mill and electrical supply men and their traveling representatives, and all dealers in cotton products and machinery, as well as to show the man interested where water powers are awaiting development, or are in operation.

The book is of convenient size for the pocket and reflects much credit on the compiler.

Business Literature.

Steel Plate Fans. Green Fuel Economizer Co., Matteawan, N. Y.

A 56-page pamphlet giving tables of pressure, velocity, horse power, etc., necessary for moving air, it also goes into the discussion of efficiency and cost of operation, as compared to the first cost of fans; takes up the various methods of construction and balancing, and points out the necessity of having each fan suited to the particular requirements of an installation. This book will be sent free by The Green Fuel Economizer Co. to interested parties.

Let Us Figure a Little. The Green Fuel Economizer Co., Matteawan, N. Y.

The folder is gotten up to represent a common school slate and tells of numerous textile mills where Green economizers are producing large savings. The actual saving in dollars is clearly figured out for a typical plant and the computations set down in the form of a balance sheet showing convincingly the yearly net profit per horse power to be obtained from a Green Fuel Economizer. This leaflet may be obtained by application to The Green Fuel Economizer Co.

A Tariff Pathfinder; The Hodges Finishing Co., East Dedham, Mass.

This company has compiled and published a table summarizing the duties on cotton cloths. Three columns serve to separate the rates on unbleached, bleached and dyed goods.

Steam Turbines. B. F. Sturtevant Co., Hyde Park, Mass.

This is Bulletin 176 of the Sturtevant Engineering Series and describes the Sturtevant steam turbine as it is now built. The steam turbine is no longer an experimental type of motive power, but power users are investigating this type of engine and this booklet gives clearly and concisely illustrated data about the Sturtevant turbines from 1 to 150 h. p.

The Legal Relation Existing Between Mill and Selling Agency; by Walter S. Newhouse, New York.

This pamphlet will prove useful to textile manufacturers, as it contains much valuable information regarding the business relations between the mill and its selling agents. Mr. Newhouse is a New York lawyer with experience in this branch of legal practice.

Recent Carrier Installations.

The new mill which is being built at Shawinigan Falls, Canada, and known as the Shawinigan Cotton Company, was designed by T. Pringle & Son, Ltd., architects of Montreal. Mr. Whitehead, who is associated with this mill, also was formerly connected with the Wabasso Cotton Company of Three Rivers, Canada. This latter mill was built about two years ago, and was equipped with the Carrier system of air conditioning, and it proved to be such a success that one of the first orders placed for the Shawinigan Cotton Mill was for the same system of heating and humidifying.

The Carrier Air Conditioning Company also report an order from the Indiana Cotton Company of Cannelton, Ind., for a complete system of air conditioning with humidity and temperature control, and also an equipment for the weave shed of the John B. Stetson Company of Philadelphia, Pa.

Last month cotton was started through the new fifty thousand spindle mill of the Sagamore Manufacturing Company at Fall River, which was designed by Wm. T. Henry, consulting engineer, of Fall River. The Carrier system in this mill is unique in the fact that indicators are placed in the engine room to inform the engineer whether or

not the apparatus is giving the desired conditions, which are different for each room throughout the mill.

The air conditioning plant in the Schlegel Manufacturing Company, Rochester, N. Y., will be put in operation within a few days. This mill, which was designed by Charles Alexander, consulting engineer, of Rochester, will manufacture cotton, silk and worsted braids, and carriage trimmings.

Shipment is just being made by the Carrier Air Conditioning Company of the apparatus for the Albany Cotton Mills of Albany, Ga., and for the Bradford Worsted Spinning Company of Louisville, Ky. Lockwood, Greene & Company are the engineers for the Albany Cotton Mills.

Frank Mossberg Company Opens New Plant.

The Frank Mossberg Company, manufacturers of reels, spools, beams, wrenches, dies, tools and special machinery, formally opened its new plant at Attleboro, Mass., on March 2.

The new plant consists of a main building, two stories high, 300 by 60 feet, and a smaller building of one story, 150 by 60 feet. Both buildings are of brick, and, together with the auxiliary buildings, give the company a floor space of about 55,000 square feet. In the construction of the building special care has been taken to insure modern, up-to-date conveniences in all departments, especial care being taken to insure proper sanitary conditions, lighting and ventilation. The foremen's desks are placed on raised platforms, with telephone connection. The drinking fountains are of the cupless variety. There are individual clothes lockers, and hot and cold water at each wash-up basin. Provision has also been made for the ultimate use of part of the floor space for reading and rest-rooms for the help. Electricity will furnish the artificial light, and most of the lights are Tungstens. Electric motors are used in different departments, and there art belt-lacing machines, and automatic screw and nut machines, among them one that turns out 8 to 12 screws a minute.

The new plant is not only a monument to the energetic and progressive spirit of the president of the firm, Mr. Frank Mossberg, but its erection is of peculiar interest because of the fact that in order to keep the Frank Mossberg Company in Attleboro, from which they contemplated moving in 1909 in order to get better working conditions, the Board of Trade subscribed the sum of $50,000 for the purpose of buying the land and erecting a building suitable to the growing needs of the Frank Mossberg Company. The Board of Trade figured that a company employing 300 skilled workmen, with a payroll running up to as high as $200,000 a year, and doing such a good business that even during the panic year, with the exception of one month, not a man was laid off for lack of work, but instead a 24-hour schedule for parts of the plant had been the rule, was worth as an Attleboro asset at least as much as their investment of $50,000. The firm has started operations in its new plant, which is now one of the best manufacturing properties in this part of the country, having the best of railroad facilities and a new spur track. It has orders enough ahead to last for six months.

The officers of the company are Mr. Frank Mossberg, President; Mr. Silas Tuttle, Vice-President; Mr. Walter I. Tuttle, Secretary and Treasurer, and Mr. Walter E. Hill, Assistant Secretary.

Italian Agency for American Machinery.

Cotton manufacturing is increasing very fast in Italy. At the present time there are over 4,000,000 spindles, and the plentiful supply of low-priced labor promises to encourage still further growth.

English machine builders have supplied the bulk of manufacturing machinery in Italy, but there are opportunities for American specialties and some concerns are already in this market. Others may be interested in the advertisement, which appears on the Special Notice pages, of a prominent Italian machinery importing firm which is prepared to take on further accounts for special textile machinery and accessories.

Careful Belt Treatment as an Investment.

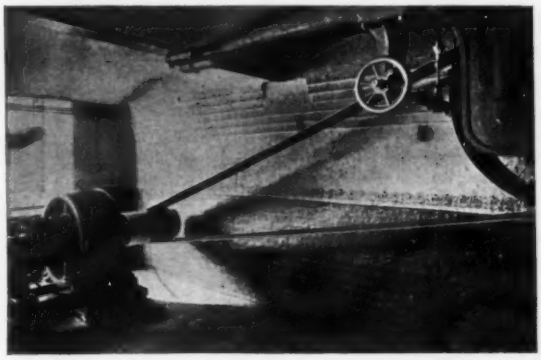
BY EUGENE MICHEL.

Engineers often pay little attention to their belting except that which is giving immediate trouble, when as a matter of fact proper treatment with a suitable preservative at regular intervals would greatly benefit all the belting. Not only would the life of the belting itself be prolonged, but by increasing the pliability and lubrication of the internal fibers, the belting is kept softer and will cling to the pulleys better, so that it may be run slack without slip. This alone insures a saving of power that would much more than pay for the attention and preservative preparation. Anyone will understand this on considering that the natural ingredients of a leather, cotton, or camel hair belt or a manila or hemp driving rope, slowly dry out, leaving the contact surfaces too hard to make close pulley contact. Unless something is added to replace these natural ingredients, the belt or rope cannot be expected to grip the pulley close enough to transmit full load.

It stands to reason also that while the slip may be prevented by undue tightening, this is not the right method to make the belt do its full duty. The added tension cannot help but increase journal friction, strain the shafting, increase the danger of hot boxes and worn bearings and increase the number of delays due to sudden belt failures, the preventing of which alone effects great saving. No matter how well the bearings are lubricated, some of the pull on the belt is wasted in overcoming added friction, and the capacity of the drive is reduced to the extent of overcoming this.

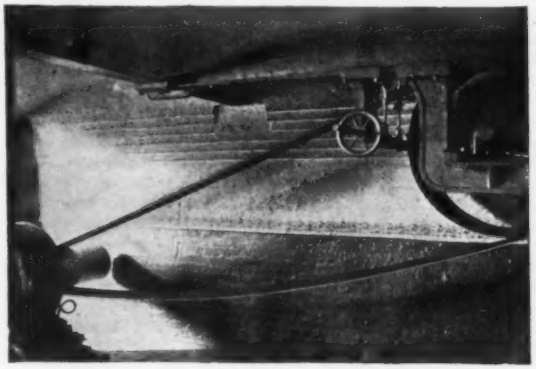
On the other hand, a belt that is kept clean, mellow and otherwise in good condition throughout, by means of a suitable preservative, bends around the pulleys with less resistance and, by reason also of a closer conformity with unevennesses of the pulley surface, can be eased or even run slack without danger of slip under full load. In fact a belt that is properly filled and is of correct dimensions for its work should break before slipping.

A practical example of the saving and satisfaction assured by proper care of belting is herewith illustrated by two photographs of a belt in the Townley Mill, Middleton, Eng. This belt, a 12-inch camel's hair, drives on the top half from a 4-foot pulley (213 r. p. m.) to a 14-inch driven pulley, and when the first picture was taken



CAMEL'S HAIR BELT AT TOWNLEY MILL, MIDDLETON, ENGLAND. THIS BELT SLIPPED EVEN WHEN TIGHTENED AS SHOWN.

furnished power to a 628-light dynamo. Slip increased as the belt continued in service so that frequently the belt had to be stretched to the tightness indicated in the first picture. In time, however, the belt manifested so great a tendency to fly off the driven pulley that a man had to be stationed where he could give it constant attention.



THE SAME BELT AFTER BEING TREATED WITH CLING-SURFACE AND EASED. TRANSMITTING FULL LOAD, BUT THERE IS NO EVIDENCE OF SLIP.

It was decided to experiment with belt preparations to improve the gripping power of the face of the belt, and Cling-Surface, made by the Cling-Surface Co. of Buffalo, N. Y., was selected.

Cling-Surface was applied hot to its face and back by means of a brush. This preparation, it should be noted, is of such a nature that it permeates the belt completely and should be applied in thin coats at intervals so that it can soak in gradually and evenly. Successive applications were made which involved attention once a week or so until the belt was thoroughly saturated.

After the first few applications of Cling-Surface the trouble from slip disappeared and the belt was gradually eased until it ran slack, as indicated in the second picture. The belt was first treated three years ago, and with a treatment of Cling-Surface every two or three months it gives no trouble now. Recently the enlargement of the plant necessitated increased lighting facilities. A new dynamo of 850 lights' capacity replaced the old one, and although this was an increase of about 25 per cent., the old belt is still used and takes care of the larger load without slip or special attention.

Good Business Outlook.

During the season of dull business in 1907 and 1908, the Crocker-Wheeler Co. retained its personnel and organization, both at their main office and at the branches, and are now in a better position than ever to manufacture and market their line of alternating current and direct current motors, generators and transformers. A recent meeting of the district and branch office managers was held at the headquarters in Ampere, N. J., at which enthusiasm and confidence for the future was manifested in all departments.

Change in a Machinery Firm.

Szepesi & Farr is a copartnership which will hereafter conduct the textile machinery business formerly handled by Schuchardt & Schutte. The address of the concern is 90 West St., New York, where the foreign machines, formerly sold by Schuchardt & Schutte, as well as several domestic textile accounts will be handled.

The firm consists of Eugene Szepesi, formerly in charge of the textile department of Schuchardt & Schutte and Arthur V. Farr, mechanical engineer and formerly instructor in engineering subjects at Stevens Institute of Technology. Mr. Szepesi sailed for Europe this week and will bring back some of the latest developments in the textile machine industry.

Large Repeat Order.

Potter & Johnston Co. of Pawtucket, R. I., who recently installed a complete picking plant for the American Thread Co. at their Hadley Mills, have received a repeat order from this company.

Busy on Winders.

Jacob K. Altemus, 2824 North Fourth St., Philadelphia, Pa., reports that his new 1910 winder, which is built for winding soft cotton yarn, wool yarn, worsted yarn, and fine cotton yarn, is giving such satisfaction that there is a great demand for this winder. Among the advantages claimed for it are its saving of floor space, of waste, of cost of winding, and of power.

Keeping Records of Belting.

A few progressive manufacturers have a system of keeping record of every belt in their factory,—how often it has to be taken up, how often replaced, etc. The New York Leather Belting Co., 55 Beekman St., New York, have perfected a system of keeping such records that is worth looking into. It is simple to keep and shows just what service is obtained from every belt. They will furnish anyone interested with a blank form, whether they use their belting or not and believe that manufacturers will profit by a careful record of belt service.

Publicity Engineer.

Walter B. Snow, 170 Summer St., Boston, Mass., announces that his office facilities have been more than doubled by removal to Rooms 421, 422, 423 and 425, in the same building; also that Benjamin Baker, A. B., formerly of The Boston Transcript, and late editor of The Navy, and Herbert M. Wilcox, S. B., chemical engineer, experienced in various industries, have been added to his staff.

Textile Expert.

J. Merritt Matthews, Ph. D., formerly head of the chemical and dyeing department of the Philadelphia Textile School, and for the past few years connected with the New England Cotton Yarn Co. as chemical adviser, has recently severed his connection with the latter concern. Dr. Matthews has gone into business for himself as consulting expert in textile chemistry, and is already under contract with several knitting and spinning mills to furnish them with technical advice and assistance in bleaching, dyeing and mercerizing. Dr. Matthews is the author of the well-known books: "The Textile Fibres," and "Laboratory Manual of Dyeing and Textile Chemistry," which have become standard handbooks on these subjects.

United States Silk Conditioning Company.

Russell W. Moore has been appointed manager of the United States Silk Conditioning Co., New York, taking the place of Mr. Hedinger, who resigned owing to ill health. Dr. Moore has been in the employ of the United States Treasury Department as examiner and consulting and expert chemist, and was for many years in charge of the Laboratory at the appraisers stores in New York. They are fortunate in securing a man with such wide and valuable experience to take charge of their works, and are confident that by his able management the company will add to its prestige and clientage.

The Phillipsdale Paper Mills, of Phillipsdale, R. I., are to install at once two 250 h. p. Stirling boilers, each of which will be equipped with a 3-retort Taylor gravity underfeed stoker. This order for Taylor stokers is the second received from these mills; the total boiler h. p. equipped with these stokers will be 1,700.

The Arabol Mfg. Co.

The Bellicosa Softener, brought out last year by the Arabol Mfg. Co., 100 William St., New York, is especially recommended to bleachers, calico printers and dyers. The manufacturers claim that, when properly mixed, it gives very satisfactory results, and is cheaper as well as easier to handle than other sizing mixtures.

A Fine Record for Belts.

A little while back the Dixon Company for the first time in eighteen years took up a belt in one of its mill rooms. For eighteen years about thirty belts in that room have been run constantly; the belts are about twenty-five feet in length and six inches in width. There is a great deal of graphite dust in the room, yet these belts have run satisfactorily without breakage or without being taken up for eighteen years.

The belts are regularly treated with Dixon's traction belt dressing, which comes in paste form. Of course, there are many who find it desirable or necessary to use a solid dressing. If a quick, convenient dressing is desired, Dixon's solid belt dressing is supplied. The Dixon Company frankly state that no solid dressing equals their traction belt dressing, for the reason that some of the ingredients in their traction dressing cannot be reduced to solid form. But if the solid dressing is preferred, it is a quick cure for slipping belts without detrimental effect upon the belting.

Frostilla for Sizing.

The high price of cattle has had a very marked effect on all the by-products, including tallow, soap stock and other products used by textile manufacturers. Furthermore, a good quality of tallow is not easy to obtain. These conditions have led to a very marked increased demand for softeners to be used in sizing instead of tallow.

Danker & Marston, 247 Atlantic Ave., Boston, are having a big sale for "Frostilla," which is a very fine exceedingly white neutral softener and which, when results are compared with the cost, is found by many manufacturers to give better money value than tallow. Most of their orders have come through the recommendation of one user to another and any one interested in the matter can easily ascertain by reference to concerns who are using it successfully just what it does and how it works out in comparison with tallow.

The cotton manufacturer is confronted with many complex questions at the present time. Not only is his raw material higher, but almost all the supplies that he uses cost more, labor is looking for higher wages and yet the price of cotton goods, yarns and cloth is weakening. Any chance therefore to cut corners and save expense without lowering quality or product should be investigated.

*North Carolina, Salisbury. The only change contemplated by the Vance Cotton Mills is the erection of a small addition to one room and the installation of twisting frames. No definite plans have been made as yet.

Modern Wool Selling.

From the earliest days of the wool industry in Australia the popularity of selling wool at auction has been recognized, and, as compared with the method of treating with the owners direct and buying on the farm, the advantages are many. The fact that the Americans have recently been endeavoring to inaugurate auction sales, and that a similar movement is spreading among English sheep farmers, is a sign that Australian methods are appealing to other producers.

There are, however, those who believe that the time is coming when auction sales of wool will give place to selling by tender. No doubt such a system may, on the surface, appear in the nature of a revolution, but it would not be without very material advantages. It would, of course, be necessary for the wool to be shown in a similar manner to that adopted at present, but the physical strain of selling and buying would be entirely done away with.

There is no doubt that the weak points of the present system is the very great physical strain which is involved in competing for wool at auction. Anyone who has witnessed a sale of wool cannot fail to be impressed with the strenuous nature of the calling of the wool buyer. The history of the past points to many cases where strong men have broken down under the strain. The visitor often asks if all this excitement is necessary, and the reply is invariably that so long as wool is sold at auction, and competition among the world's buyers is so keen, the exciting character of wool sales will continue.

It does not seem impossible, however, to inaugurate a scheme which will do away with the excitement and the strain involved in the present system. Selling under a system of tender would probably revolutionize wool selling, and be a step in the right direction. Naturally there would be objections raised to such a radical departure from old methods, but if it can be proved that it would be to the material advantage of all concerned the reform should not be impossible.

The system would, of course, need very careful elaboration. The machinery at present to ensure the smooth working of an enormous trade is well nigh perfect, representing, as it does, the experience of generations. A good deal of the present machinery would, however, remain. For instance, catalogues could be prepared in the usual way, and wool could be shown and valued in the usual way, but the buyer could sit down quietly in his office and fill his tender form, and forward it to the broker, thus doing away entirely with the physical strain now involved in buying at auction.

The point to be considered, from a wool grower's standpoint, is whether buyers would bid as freely on paper as they do under present conditions, but the probability is that competition would be as keen as ever. One good result would be that buyers would not start wool at a low price, and bid up to a high one. To secure wool it would be necessary to put the highest mark on tenders in the first instance, and so save much time. There would certainly be a large amount of clerical work involved in analyzing the numerous tenders for each lot, but this could probably be systematized.

While it might be too much to expect the trade to adopt such a revolutionized method at the outset, it might be possible to try the experiment in a small way. For instance, the system of tendering could be applied to wools passed in at auction, taking the place of private treaty as we know it at present. In some seasons we have a big volume of wool which, having been dealt with twice at auction, cannot under the selling regulations be reoffered at auction. If catalogues of these wools could be prepared during recess times, and submitted to tender, it might prevent a large quantity of wool being shipped for sale abroad, and afford owners an opportunity to dispose of their wool.

In a sense the system is not a new one, for the Sydney Meat Preserving Company's wool has been sold by tender to buyers, and the big fellmongering establishment sell a good deal of wool by private contract. The nucleus of the idea is there, and it is for the trade to say whether it could not be elaborated and extended with advantage to all concerned. If successful it might be further extended, and it would be interesting to learn the views of those engaged in the trade as to what, in their opinion, would be the probable development of such a scheme.—Dalgety's Review.

Return From Abroad.

D. J. Danker of Danker & Marston, Boston, Mass., has recently returned from a trip to Europe, after having visited the leading textile centers of England and France. The object of his visit was to investigate the latest and most improved processes of finishing and sizing and he reports that his visit was very successful. The customers of Danker & Marston will doubtless reap substantial benefits from the journey.

Prosperity in the Worsted Machinery Trade

Prince Smith & Sons, Keighly, Eng., have purchased a plot of land 3 1/2 acres in area near their works for the erection of an up to date iron foundry. It is bounded by the river, railway and two main roads. A large mansion which stood on the estate is being pulled down and the stone utilized for building houses for the workmen. This step has been taken to meet their largely increasing business, and when completed and all iron foundry done in the new works, it will allow the whole of the present Burlington works to be used for the erecting, etc., of machinery, etc.

The Monroe Cotton Mills of Monroe, Ga., have given repeat order to the American Moistening Co. for humidifiers.

The Springfield Knitting Co. of Springfield, Mass., have adopted the American Moistening Co.'s system of humidifiers.

Recent Textile Patents.

BEARING for Twister Spool Spindles. 951,548. Alonzo E. Rhoades, Hopedale, Mass.

BOBBIN SPINDLE. 950,090. John A. Clark, Worcester, Mass.

EMBROIDERING Machine. 952,858. Robert Zahn, Plauen, Germany.

EMBROIDERY Machine Spool-holder. 951,810. Jacob Frey, New York.

FABRIC and Knitting the Same. Checkered Plated. 951,565. Emil A. Hirner, Allentown, Pa.

KILN. 952,777. Thomas M. Wilson, Philadelphia, Pa.

KILN FEEDING Apparatus. 951,911. Richard Hoehne, Chicago, Ill.

KILNS. Apparatus for Utilizing the Waste Heat of. 951,191. Henry G. Layng, New York.

KNIT GOODS and Making Same. Reinforced. 952,709. Michael T. Murphy, St. Joseph, Mich.

KNITTED FABRIC. 951,033. Bernard T. Steber, Utica, N. Y.

KNITTING MACHINE. Rib. 951,706. Robert W. Scott, Leeds Point, N. J.

KNITTING MACHINE Stop Motion. 951,358. George L. Ballard, Norristown, Pa.

KNITTING MACHINES. Striping Device for. 952,774. Harry H. West, Plymouth, Pa.

KNITTING MACHINE Stop Motion. 950,695. Frank J. Heady, Sherburne, N. Y.

LOOM. 951,935. Anna M. Boydston and Carrie A. Cowden, Toledo, O.

LOOM PICKER Strap. 952,533. Napoleon Lemaire, Taunton, Mass.

LOOM. Circular. 951,449. Anker Petersen, Chelsea, Mass.

LOOM SHUTTLE. Weft-replenishing. 951,488. Eppa H. Ryon, Worcester, Mass.

LOOM STOP Motion. 950,910. Albert A. Gordon, Jr., Worcester, Mass.

LOOM RACK. Narrow Ware. 952,159. William Wattie, Worcester, Mass.

LOOM. Automatic Filling Replenishing. 951,949. Oscar Janelle, Manchester, N. H.

LOOM BRAKING Device. 950,917. Aquila E. Healey, Fall River, Mass.

LOOM. Weft Replenishing. 952,498. Edwin H. Barrett, Readville, Mass.

LOOM. Weft Replenishing. 951,246. Simeon S. Jackson, Readville, Mass.

LOOM. Weft Replenishing. 951,659. Eppa H. Ryon, Worcester, Mass.

LOOM WARP Stop Motion. 951,487. John Regan, New Bedford, Mass.

LOOMS. Stretching and Equalizing Rolls for. 951,402. Christian Kromer, Philadelphia, Pa.

LOOM SHUTTLE Changing Mechanism. 950,933. Maurice Lemarchand, Rouen, France.

LOOM WARP Beam. 952,226. James A. Bangle and Shields R. Hunter, Greensboro, N. C.

LOOMS. Apparatus for Operating Picker Motion for. 952,096. Charles Brehio, Worcester, Mass.

SPINDLE Centering Device. 952,931. John B. Nainteau, Central Falls, R. I.

SPINNING RING Holder. Rotary. 952,804. Bicknell Hall, Taunton, Mass.

SPINNING MACHINE Thread Guide Support. 951,310. William Forget, Uxbridge, Mass.

SPINNING and Doubling Machine. 951,932. Ernst Bebie, La Farga, Spain.

SPINNING and Twisting Device. Yarn. 950,507. Victor Belanger, Boston, Mass.

SHUTTLE Changing Mechanism. Automatic. 952,652. Sakichi Toyoda, Nagoya, Japan.

YARN DRESSING Machine. 951,858. Paul Turlur, Wattrelos, France.

YARNS and Fabrics by the Special Utilization of Washed Flax Waste. Manufacturing. 951,251. Evald Korselt, Ghent, Belgium.

Recent Textile Trade Marks Registered.

"Navajo." Hosiery. Paramount Knitting Co., Chicago, Ill.

"Apache." Hosiery. Paramount Knitting Co., Chicago, Ill.

"Square Deal." Handkerchiefs. Carson, Pirie, Scott & Co., Chicago, Ill.

"Our Uncle Sam." Men's work shirts. Sears, Roebuck & Co., Chicago, Ill.

"Lissue." Cotton handkerchiefs not in the piece. Tootal Broadhurst Lee Co., Ltd., Manchester, England.

"Consuello." Girls' dresses. Louis Sonn & Co., New York.

"Southern Pride." Cotton sheetings. Quinn-Marshall Co., Lynchburg, Va.

"Akela." Worsted piece goods. A. H. & F. L. Sayles, Pascoag, R. I.

"Half Moon." Sheetings and tickings. G. A. Stafford & Co., Greenwich, Conn.

"Honor Bright." Work shirts, etc. Reliance Mfg. Co., Chicago, Ill.

"North Pole." Hosiery. Jonesville Mfg. Co., Jonesville, S. C.

In New Factory.

The Western Thread Co. have moved to their new factory at Elgin, Ill. The growth of their business has been constant and rapid and they have outgrown their quarters in Chicago, where they have been located for a number of years, but the new plant is built for their special accommodation and fitted up with every modern appliance and equipment which their previous experience has suggested. Their dyeing department is completely equipped for skein dyeing, skein bleaching, cone and tube winding for the trade.

Back from Germany.

E. W. S. Jasper, manager of the Continental Latch Needle Co., New York City, who handles the German needle manufactured by Theodor Groz & Sohne, has just returned from a visit to their factories in Ebingen, Bitz and Messtetten, Germany.

Mr. Jasper also represents Walter & Co., G.m.b.H., and visited their flat knitting machine factory at Muhlhausen i. Thuringen, Germany. He reports excellent business in both lines.